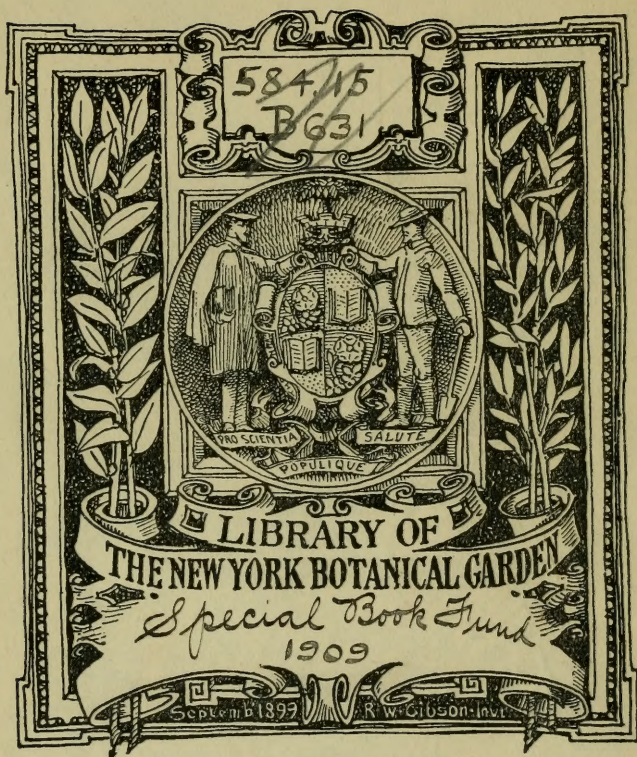


ORCHIDS
OF
SOUTH AFRICA

H. BOLUS







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ORCHIDS OF SOUTH AFRICA.

VOLUME I.

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ICONES
ORCHIDEARUM AUSTRO-AFRICANARUM
EXTRA-TROPICARUM;
OR,
FIGURES, WITH DESCRIPTIONS,
OF
EXTRA-TROPICAL
SOUTH AFRICAN ORCHIDS.

BY
HARRY BOLUS, F.L.S.

VOLUME I.

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PREFACE.

To the botanist few orders of plants stand more in need of illustration from living specimens than Orchids. This is chiefly due to the highly differentiated form either of the perianth or of the essential organs, and, in the latter case to the additional fact that these are usually more or less fleshy in their texture, and that dried specimens of these organs do not recover their shape after soaking or boiling. Hence it is often difficult both to describe them satisfactorily, and for the student to identify specimens from such descriptions. This is especially the case in the tribe Ophrydeæ, so largely represented in South Africa, and it is so in a still greater degree (because the column is usually most highly complicated) in its sub-tribe Corycieæ of which three out of its four genera are exclusively confined to South Africa. It is to endeavour to meet this need that this work has been undertaken. An exception has been made in the case of a few species which have been drawn from dried specimens, where there was no hope of obtaining living plants within a reasonable time, and where (in most cases) flowers freshly preserved in spirits or glycerine have been sent to me by kind correspondents.

To the field-botanists, students, and lovers of nature in South Africa, a class which, it is pleasant to know, is now yearly increasing, I trust the book will be of service, and prove a stimulus to fresh investigation and discovery. A country life affords the greatest opportunities for the close observation of nature, and more than one farmer has been amongst its friends

OCT 6 - 1909

and correspondents who have enthusiastically and generously aided me by procuring and sending living specimens from distant parts of the country.

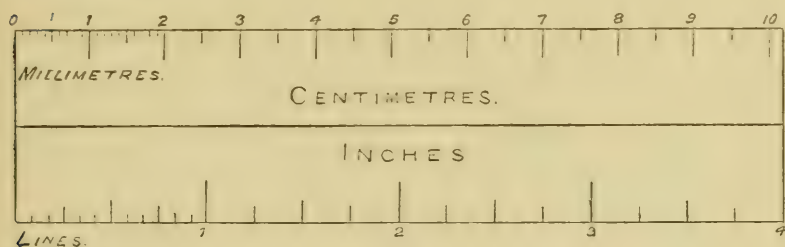
I must especially record my obligations to the great national establishment at Kew, whose authorities have at all times afforded me every assistance ; to Prof. OLIVER, F.R.S., who has seen, and revised for me the proof sheets of the plates for the press during my residence at the Cape ; also, at the Cape, to Prof. MACOWAN, Prof. BODKIN, Prof. GUTHRIE, and Dr. MARLOTH, of Cape Town ; to Mr. H. G. FLANAGAN, of Komgha ; to Messrs. E. GALPIN and W. CULVER, of Barberton ; to Dr. S. SCHOENLAND, and Mr. J. GLASS, of Grahamstown ; to Mr. T. R. SIM, Curator of the Botanic Gardens, King William's Town ; and to Mr. J. MEDLEY WOOD, Curator of the Botanic Gardens, Durban, Natal. Last, but not least, to Mr. RUDOLF SCHLECHTER, an enthusiastic and diligent botanist and collector, who has lately arrived from Germany, and is at present engaged in an extensive tour throughout South Africa. This gentleman has already made considerable additions to our knowledge of the Cape Flora, and has been good enough to furnish me with many living specimens, and to aid me with his observations and advice upon several critical species.

H. B.

CAPE TOWN, *March, 1893.*

NOTE.

THE measurements used throughout in this book are those of what is known as the metrical system, of which the unit is the meter, which is equal to 39·37079 inches in English. This is now largely employed by the scientific writers of every nation, and I regard it as a duty to promote by all possible means the use of the system, which must assuredly, sooner or later, be universally adopted. To facilitate its use by those who may not be familiar with it I have added the following scale showing on the upper line the metrical, and on the lower the English measurements :—



Roughly speaking, the

Meter is equal to 3 ft. 3 in. and 3-8ths, or 1 yard and 1-10th.

Decimeter ,, 4 inches.

Centimeter ,, about four-tenths of an inch.

Millimeter ,, about one-twenty-fifth of an inch.

Where two measurements are given, as for example "stem 15-35 cm. high," or "leaves 3-7 cm. long," it is to be understood that these are the extremes of size seen by the writer, and that the average length is probably nearly midway between the two.

The abbreviation met. is used for meter; cm., for centimeter; mill., for millimeter.

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ADDITIONS AND CORRECTIONS TO PARTS I. AND II.

SINCE the publication of Part I. of this work I have seen reason to change my views in regard to certain plants therein figured, and I take this opportunity of stating them, and also of making corrections of some errors which had escaped attention :—

PLATE 4. [*Eulophia micrantha*, Lindley.] In the *Journal of Botany*, vol. xxxii, p. 330 (1894), Mr. Schlechter and myself gave our reasons for removing this plant to *Acrolophia*, under the name *A. micrantha*, Schlechter & Bolus.

PLATE 5. [*Eulophia cochlearis*, Lindley.] Similarly removed to *Acrolophia cochlearis*, Schlechter & Bolus.

PLATES 6, 7, 8, 9, 10. In the heading of these plates in the third line, in place of the words Sub-tribe Cymbidieae, read Sub-tribe Sarcantheae.

PLATE 17. [*Habenaria Galpini*, Bolus.] Further consideration of numerous forms of *H. tetrapetala*, Reichenbach fil., shows the latter to be an extremely variable species, and *H. Galpini* can only be regarded as a form of it in which the petals are bipartite.

PLATE 26. [*Pachites Bodkini*, Bolus.] In the plate the numbers to the analytical figures 3 and 4 have been accidentally transposed, and should be corrected with the pen.

PLATE 33. [*Disa torta*, Swartz.] I now think that the form of lip, which appears to be constant, and which there is nothing else in *Disa* to resemble, together with the peculiar bent wiry stem in every species but one, make it desirable to maintain the genus *Schizodium* as established by Lindley. The present plant should therefore be regarded as *Schizodium arcuatum*, Lindley.

PLATE 34. [*Disa clavigera*, Bolus.] For the reasons given above, and because Lindley's *Schizodium clavigerum* appears to be merely a small-flowered form of his *S. rigidum*, I refer this plate to the latter species.

PLATE 49. [*Pterygodium venosum*, Lindley.] For this read: *Cera-tandra venosa*, Schlechter, in *Engl. Bot. Jahrb. ined.*—Mr. Schlechter has informed me of his intention to remove this plant to the latter genus, to which it more properly belongs.

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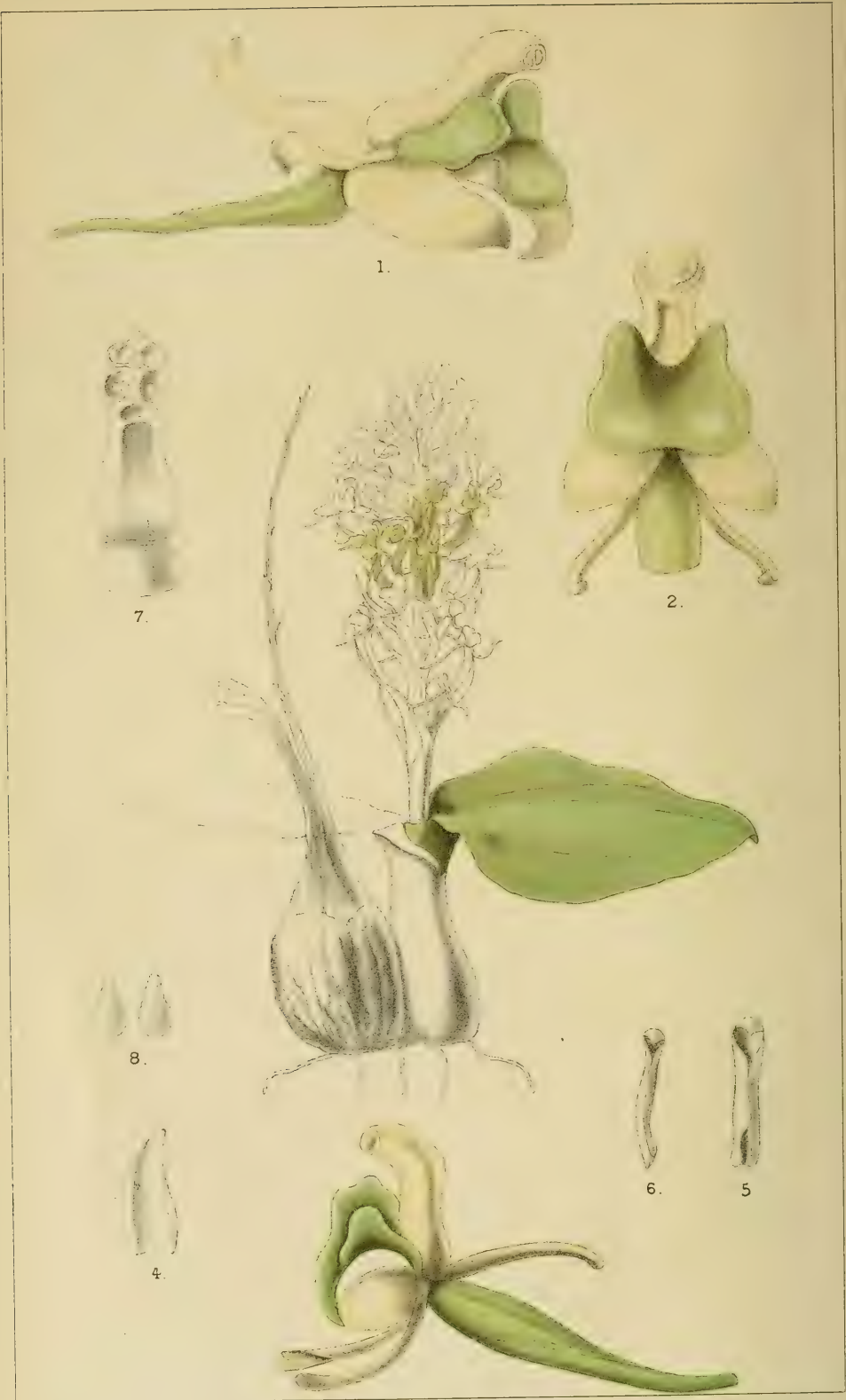
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1893.

[August 15th.]



H. Bolus del.

F. Huth, Lith^r Edin^r

LIPARIS CAPENSIS, LINDLEY.

TAB. 1.

Tribe EPIDENDREÆ.

Sub-tribe LIPARIDÆÆ.

Genus LIPARIS.

Liparis Capensis, *Lindley, in Ann. Nat. Hist., vol. ii, p. 314* (1840); *Ridley, in Journ. Linn. Soc. (Bot.) vol. xxii, p. 272* (1887).—Herba glabra humilis; pseudo-bulbus hypogæus ovatus, 2·5–4 cm. longus; folia sæpius 2, humistrata ovata subacuta crassiuscula coriacea, superne lævia, 2·5–6 cm. longa (plantæ pinguiores folium tertium vel etiam quartum ostendunt); scapus erectus rigidus angulatus multiflorus (10–30-fl.), 2–6 cm. longus; flores parvi conferti patentes, bractæ lanceolatæ acuminatæ, ovariis breviores; sepala lateralia oblonga subfalcata, 4 mill. longa, impar posticum longius oblongum, marginibus revolutis; petala linearia marginibus revolutis, 6 mill. longa; labellum trilobum carnosum arcuatum quam petalis duplo brevius, lobis lateralibus parvis rotundatis erecto-incurvis, medius major oblongus subretusus deflexus; columna oblongo-cuneata curva crassiuscula exalata, labello brevior; capsula cylindrica cum pedicello circa 1·5 cm. longa. (*Ex exempll. plur. viv.*) *Sturmia Capensis*, *Sonder, in Linnæa, vol. xix, p. 71* (1847).

Hab: South-western Region; CAPE COLONY: near Cape Town, heathy sandy places on the Flats; hills behind Simon's Town, alt. 240 met.; slopes of Table Mountain, 750 met.; Swellendam, *Bowie*; fl. April–June:—*Herb. Norm. Austr-Afr.*, 151; *Zeyher*, 3887; *Bolus*, 4598.

Plate 1. Figs. 1, 2, 3, different flowers; 4, one of the side sepals; 5, odd sepal; 6, one of the petals; 7, column, front view; 8, pollinia, —all variously magnified.

A small glabrous herb. Pseudo-bulb covered by the soil, ovate, whitish, 2·5–4 cm. long; leaves usually 2, lying flat on the ground, ovate subacute thick leathery, smooth above, 2·5–6 cm. long (luxuriant plants sometimes show a smaller third, and even fourth, leaf); scape erect rigid angulate many-flowered (10–30), 2–6 cm. long; flowers small crowded spreading, bracts lanceolate acuminate, shorter than the ovaries; side sepals oblong subfalcate, 4 mill. long, odd sepal posticous oblong longer, margins revolute; petals linear, margins revolute, 6 mill. long; lip tri-

lobed, somewhat saddle-shaped, fleshy arched, half as long as the petals, side lobes small rounded erect-incurved, the middle lobe larger oblong subretuse deflexed; column oblong-cuneate curved, without wings, shorter than the lip; capsule cylindrical, together with the pedicel about 1.5 cm. long.

Described from numerous living specimens. Colour of the lip bright dark green, the remaining parts of the flower greenish yellow. The species appears to be endemic; a supposed identification with specimens (in fruit only) collected by Mann on the Cameroon Mt., being extremely doubtful. It is somewhat frequent on the Cape Peninsula, but I have never seen many plants together excepting on the top of the hills just behind Simon's Town.



H. Bolus del

F. Huth, Lith^r Edin^r

LIPARIS BOWKERI, HARVEY.

TAB. 2.

Tribe EPIDENDREÆ.

Sub-tribe LIPARIDÆÆ.

Genus LIPARIS.

Liparis Bowkeri, *Harvey, Thes. Cap., vol. ii, p. 6, t. 109, (1863); Ridley in Journ. Linn. Soc. (Bot.) vol. xxii, p. 270 (1887).*—Herba glabra erecta, 10–18 cm. alta. Pseudo-bulbus hypogæus anguste ovatus vel subcylindricus; caulis gracilis angulatus subflexuosus foliosus, sursum bracteis 2–4 cordatis acuminatis vacuis vestitus; folia 3–4, infimum ad vaginam fere reductum, superiora oblonga vel ovata acuta, basi laxè vaginantia, undulata, prominenter multinerva, tenuia, adscendentia, 10–12 cm. longa, 3·5–5 cm. lata; racemus laxè 10–15-florus, bracteis ovario cum pedicello brevioribus; sepala lateralia falcato-oblonga patentia torta, 1 cm. longa; sepalum impar lineare, marginibus revolutis, erectum, 1·4 cm. longum; petala linearia, marginibus revolutis, patentia, sepalis subæquilonga; labellum unguiculatum, vel interdum subsessile, lamina ovata vel rotundata obtusissima venosa, marginibus erecto-incurvis, basi callis duobus carinato-elevatis ornata; columna gracilis arcuato-erecta exalata. (*Ex exempl. unico vivo, pluribusque exsiccatis*).

Hab: South-eastern Region; CAPE COLONY: Coldspring, near Grahamstown, fl. Febr., *J. Glass!* near King William's Town, fl. Dec., *T. R. Sim!* shaded crevices of rocks, Fort Bowker, Kaffraria, *H. Bowker!* NATAL: *Gerrard!* Kar Kloof, fl. Nov., *Mrs. Saunders!*

Plate 2. Fig. 1, flower, side view; 2, ditto, front view; 3, column with lip,—all the foregoing magnified about 4 diameters; 4, side sepal, flattened out; 5, odd sepal, back view; 6, one of the petals,—all the latter magnified about 3 diameters; 7, column, front view; 8, pollinia, front and side view,—the two last variously magnified.

An erect glabrous herb, 10–18 cm. high. Pseudo-bulb sunk in the ground, narrow-ovate or sub-cylindrical; stem slender angled, somewhat flexuous, leafy, with 2–4 empty cordate acuminate bracts; leaves 3–4, the lowest almost reduced to a sheath, the upper oblong or ovate acute, loosely sheathing at base, waved, prominently many-nerved, thin, ascending, 10–12 cm. long, 3·5–5 cm. wide; raceme loosely 10–15-flowered, bracts shorter than the ovary and pedicel; side sepals falcate-oblong

spreading twisted, 1 cm. long; odd sepal linear, margins revolute, erect, 1·4 cm. long; petals linear, margins revolute, spreading, about as long as the sepals; lip clawed at base, or sometimes sub-sessile, the limb ovate or rounded, very obtuse, veined, margins erect-incurved, furnished at base with two ridged calli; column slender erect arched, without wings.

Described from one living specimen sent by Mr. Sim, from near King William's Town, and from several dried specimens. The colour of the flowers is ochraceous yellow, the calli at the base of the lip, and the operculum of the anther, green.



H. Bolus del.

F. Huth, Lith. Edin.

BULBOPHYLLUM SANDERSONI, REICHENBACH FIL.

TAB. 3.

Tribe EPIDENDRÆ.

Sub-tribe DENDROBIEÆ.

Genus BULBOPHYLLUM.

Bulbophyllum Sandersoni, *Reichenbach fil. in Flora* for 1878, p. 78.—Caulis repens cylindricus elongatus, internodiis pollicaribus vel ultra; pseudo-bulbi ovoidei vel pyriformes, obtuse 4-7-angulati, 3-4.5 cm. longi; folia 2, elliptica vel oblonga, acuta vel emarginata, 1-nerva coriacea, 5-7 cm. longa; scapus aphyllus erecto-falcatus a pseudo-bulbo distinctus, 8-15 cm. longus, 4-30-florus, rachis sursum dilatata plana, bracteis deltoideis; sepala lateralia ovato-lanceolata falcata acuta, basi concava, intus scaberula, circa 6 mill. longa; sepalum impar lineare sub-obtusum, lateralibus fere duplo longius; petala linearia falcato-patentia reflexave, sepalis lateralibus paullo breviora; labellum carnosum, basi subquadratum crassum carinatum, deinde subiter in apicem sub-obtusam pendulam dentiformem retroflexam contractum, totum vix 2.5 mill. longum; columna brevis, late alata, alis in dente brevi utroque latere desinentibus; capsula oblonga, usque ad 1.5 cm. longa. (*Ex exempl. plur. viv. exsiccatisque*) *Megaclinium Sandersoni*, *Oliver, in Bot. Mag. (1871) sub tab. 5936 (nomen tantum)*; *M. scaberulum*, *Rolfe, in Gardener's Chronicle, vol. iv, p. 6, July 7, 1888.*

Hab: South-eastern Region; NATAL: *Sanderson, 898!*; *Mrs. Saunders!*—TRANS-VAAL REPUBLIC: near Barberton, on trees, Saddle-back Kloof and Moodie's, alt. 1230 meters, fl. Aug-Sept., *Culver, 6!* Umzindine Creek, alt. 1380 meters, fl. Oct-Nov., *Galpin, 688!*

Plate 3. The plant with narrower leaves drawn from specimens received from Mr. W. Culver, Barberton; that with broader leaves from a plant cultivated at the Royal Gardens, Kew, said to have come from Pondoland. Fig. 1, flower; 2, ditto, viewed from behind,—both magnified about 6 diameters; 5, 6, column; 7, pollinia,—all the latter variously magnified, and all taken from the narrow-leaved specimens from the Trans-Vaal.

Stems aggregated creeping cylindrical elongate, internodes 2-3 cm. long; pseudo-bulbs ovate or pear-shaped, 4-7-angled, 3-4.5 cm. long; leaves 2, elliptical or oblong, acute or emarginate, 1-nerved, leathery, 5-7 cm. long; scape proceeding from

the stem near the base of the pseudo-bulb, leafless erect sub-falcate, 8–15 cm. long, rachis dilated and flat in the upper part, 4–30-flowered, the flowers racemose upon each face, bracts deltoid; side sepals ovate-lanceolate falcate acute, concave at base, scabrid on the upper surface, about 6 mill. long; odd sepal linear sub-obtuse, nearly twice as long as the lateral; petals linear falcately spreading or reflexed, a little shorter than the side sepals; lip fleshy, square thick and keeled at the base, then suddenly contracted into a sub-obtuse tooth-like pendulous point, the whole scarcely 2·5 mill. long; column short, widely winged, the wings terminating in a short tooth on either side at the summit; capsule oblong, 1–1·5 cm. long.

Described from several living and dried specimens. Colour of the flowers dull red-purple, the petals usually paler or reddish-orange. From a drawing which I have seen by the late Mr. John Sanderson, the colour is probably somewhat variable. I have examined the specimens in the Kew herbarium marked *Megaclinium Sandersoni*, and the type of *M. scaberulum*, and compared them with Mr. Culver's specimens from Barberton here described, and incline to regard them all as forms of one variable species. This plant is interesting to South African students as being the only one of a somewhat large genus which straggles beyond the tropic so far south. The section *Megaclinium* to which our plant belongs is held by some botanists as a good genus; the difference from *Bulbophyllum* consists almost exclusively in the flattened and enlarged rachis of the inflorescence. The remaining members of this section are all, with one exception, inhabitants of tropical Africa. The genus *Bulbophyllum* as a whole, is, however, spread over the tropical regions throughout the globe.



H. Bolus del.

F. Ruth, Lith. Edinb.

EULOPHIA MICRANTHA, LINDLEY.

TAB. 4.

Tribe VANDEÆ.

Sub-tribe EULOPHIÆ.

Genus EULOPHIA.

Eulophia micrantha, *Lindley, Gen. & Sp. Orch.* p. 184 (1833).—Caulis erectus, basin versus foliosus, supra medium paniculatum ramosus, 30–75 cm. longus; folia 4–9, ensiformia equitantia rigida, minutissime serrulata, erecto-patentia, 15–25 cm. longa, in bracteis abeuntia; flores secus ramos laxè racemoso-paniculati, patentes, demum deflexi; bracteæ lanceolatae acuminatae, ovariis breviores; sepala et petala subsimilia, oblonga ovato-oblongave, obtuse acuta, 4–6 mill. longa; labellum posticum majus sub-galeatum, circumscriptione obovata, basin versus cuneatum, margine irregulariter dentato crispuloque, supra calcar dorso constrictum, intus papillis longis filiformibus ornatum, extus minute verruculatum, calcare brevi ovato inflato; columna brevis crassa basi excavata. (*Ex exempll. plur. viv. exsiccatisque*).

Hab: South-eastern Region; CAPE COLONY: sandy places near the coast, Port Elizabeth; Round Hill, Lower Albany, fl. Dec., *Bolus*, 6212; Kowie, *H. Hutton*!; among shrubs on sand-hills near Kei River Mouth, alt. 60 met., fl. Dec., *Flanagan*, 1026!

Plate 4. The small figure to the left represents the whole plant reduced in size; the single leaf and inflorescence of the natural size. Fig. 1, flower; 2, one of the side sepals; 3, odd sepal; 4, one of the petals; 5, 6, lip from different flowers,—all the foregoing magnified 4 diameters; 7, column, front view; 8, ditto, side view; 9, 10, pollinarium; 11, ditto, the pollinia removed showing the spirally-twisted elastic threads by which they are attached to the stipes,—all the latter variously magnified.

Stem erect, leafy at base, paniculately branched above the middle, 30–75 cm. long; leaves 4–9, ensiform equitant rigid, minutely serrulate, erect-spreading, 15–25 cm. long, passing into bracts; flowers loosely racemose-paniculate along the branches, spreading, at length deflexed; bracts lanceolate acuminate, shorter than the ovaries; sepals and petals nearly alike, oblong or ovate-oblong, obtusely acute, 4–6 mill. long; lip posticous larger sub-galeate or spoon-shaped, obovate in outline, cuneate

at base, margin irregularly toothed and crisped, constricted on the back just above the spur, furnished within with four rows of filiform papillæ, externally minutely warty, spur short ovate inflated ; column short and thick, hollowed at the base.

Described from several living and dried specimens. Colour of the sepals tawny brown, petals yellowish-brown, lip cream-colour with brown markings, sometimes (or always?) with a deep red 3-lobed patch on the inner surface near the base. The limb of the lip resembles the bowl of a spoon, and is only slightly spreading, not erect; this, and the constriction at its base, forming a kind of inset or cross-furrow, viewed from the outside, serves to distinguish it from *E. cochlearis* ; but the distinction is not easily seen in dried specimens. This species appears to be almost exclusively eastern, as *E. cochlearis* is western, in its distribution. The flowers are the smallest amongst South-African Eulophiæ.



H. Bolus del.

F. Huth, Lith. Edin.

EULOPHIA COCHLEARIS, LINDLEY.

TAB. 5.

Tribe VANDEÆ.

Sub-tribe EULOPHIÆ.

Genus EULOPHIA.

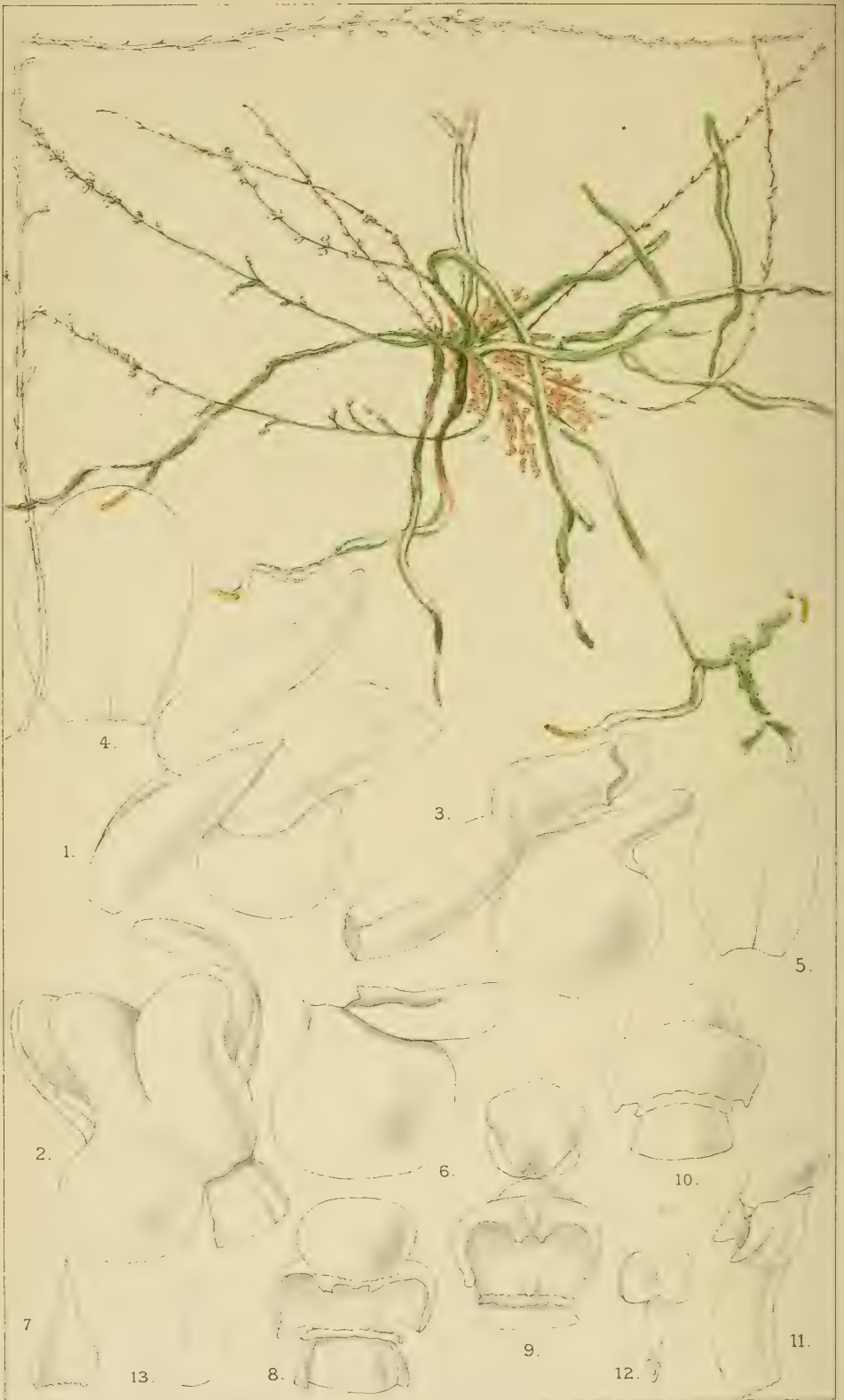
Eulophia cochlearis, *Lindley, in Comp. Bot. Mag. vol. ii, p. 202* (1836).—Caulis, folia, bracteæ, sepala petalaeque fere ut in precedente (*E. micrantha*); labellum posticum erecto-recurvum subquadratum concavum emarginatum crenulatum crispum sepalis petalisque multo majus, intus papillis filiformibus barbatur, calcar subsphærico; columna fere *E. micranthæ* sed stigma majus suborbiculare depressum nec excavatum (*Ex exempl. plur. viv.*).

Hab: South-western Region; CAPE COLONY: sandy downs east of Table Mountain, Cape Peninsula, alt. below 50 met., fl. Nov.-Dec., frequent, Bolus 4561; Outeniqualand (district of George) Drège: Zeyher, 1589, 3897!; near Mossel Bay, Oct., Burchell, 6177, 6201!; near Krakakamma, Uitenhage, Febr., ibid., 4594!

Plate 5. Fig. 1, flower, side view; 2, ditto, front view; 3, lip, viewed obliquely; 4, ditto, with column,—all the foregoing magnified 4 diameters; 5, column; 6, pollinarium, front and side views,—all the latter variously magnified.

Stem, leaves, bracts, sepals and petals almost exactly like those of the preceding species (*E. micrantha*); lip posticus, much larger than the sepals and petals, erect or recurved, nearly square in outline, concave emarginate crenulate crisped, upper surface bearded with filiform papillæ, spur short nearly spherical; column much like that of the preceding species, but the stigma larger, somewhat orbicular, only slightly depressed, not hollowed out.

Described from numerous living and dried specimens. Colour of the flowers as in the preceding species, but the lip is destitute of the large red spot seen in that. The two species are closely allied and difficult to distinguish in the dried state; yet the difference in the lip is well-marked and would be striking in a larger flower. It may be added that the flower of this species, and especially the lip, is usually a little larger than in *E. micrantha*. I have seen no intermediate forms.



J. Sanderson del.

F. Huth, Lith. Edin.

ANGRAECUM CHILOSCHISTAE, REICHENBACH FIL.

TAB. 6.

Tribe VANDEÆ.
Sub-tribe CYMBIDIEÆ.
Genus ANGRÆCUM.

Angræcum Chiloschistæ, *Reichenbach fil. in Linnaea*, vol. xx, p. 678 (1847).—Herba epiphytica gracillima aphylla, radicibus flexuosis 1·5–2 mill. crassis; caulis abbreviatus, 2–3 cm. longus, 3 mill. crassus; racemi plures (3–12) gracillimi, adscendentes vel penduli, laxe 15–20-flori vel plurimiflori (ad 65-fl.), 4–20 cm. longi; bracteæ minimæ lanceolatæ persistentes, floribus breviores; flores minutissimi, 2–2·5 mill. longi; sepala late obovata obtusissima, 1·33 mill. longa; petala conformia, paullo minora; labellum abbreviatum, transverse oblongum, obtusissimum, petalis æquilongum, sacco majusculo (limbum superante) scrotiformi, intus nudo, ovario fere æquilongo, præditum; columna abbreviata subcucullata, apice bidentata (vel rostellum bidentatum) utroque margine inflexo, basi libero truncato quasi alato; anthera majuscula subquadrata; pollinia 2, pyriformia, stipite unico spathulato; capsula cylindrica, breviter pedicellata, circa 4 mill. longa. (*Ex exempl. plur. exsiccatis*).

Hab: South-eastern Region; NATAL: on trees near Sea-cow Lake, *J. Sanderson*; near Tongaat, fl. Febr., *Mrs. J. R. Saunders*! (No. 6219 of my herb.); station not specified, *Gueinzius*!—Also, beyond our limits, Shirè Valley, *Waller*!; near Blantyre, *Meller*!

Plate 6. Fig. 1, 2, flowers; 3, ditto, sepals and petals removed; 4, one of the sepals; 5, one of the petals; 6, lip—all the foregoing magnified about 20 diameters; 7, bract, mag. about 10 diam.; 8, column, front view; 9, ditto, the anther-lid lifted; 10, ditto, back view; 11, ditto, side view; 12, pollinarium; 13, one of the pollinia, —all the latter variously magnified.—*Note:* The longer separate raceme is drawn from one of *Meller*'s specimens, from Blantyre, in the Kew herb.

An epiphytical slender leafless herb; roots flexuose, 1·5–2 mill. in diameter; stem short, 2–3 cm. long, 3 mill. thick; racemes several, (3–12) very slender, ascending or pendulous, loosely 15–20-fl. (or very many, up to 65-fl.) 4–20 cm. long; bracts minute lanceolate persistent, shorter than the minute flowers; sepals broadly obovate, very obtuse, 1·33 mill. long; petals similar,

but a little smaller; lip short, transversely oblong, very obtuse, as long (including the orifice of the spur) as the petals, sac large for the size of the flower and exceeding the limb, scrotiform, nude within, nearly as long as the ovary; column short, somewhat hooded by the folding inward of the margin both at the top and on the sides, the latter being free and truncate at base as if winged; anther large, somewhat square; pollinia 2, pyriform, with a single spathulate stipes; ovary cylindrical, shortly pedicellate.

Described from several dried specimens, and also from some flowering racemes freshly preserved in glycerine, kindly sent to me by Mrs. J. R. Saunders of Natal. The flowers are white. The figure of the whole plant in the plate is from a drawing by the late Mr. John Sanderson of Natal; the analyses are drawn from my own dissection. Mrs. Saunders' specimens are much smaller than those of Gueinzus and Meller, and only a dissection of the flowers enabled me to feel assured that the latter simply represent a more luxuriant growth. In habit and general appearance this plant much resembles an *Angræcum* from Madagascar described by Lindley as *Microcoelia exilis*. It is even more strikingly like *A. Fasciola*, Lindley, from Surinam, and *A. tenue*, Lindley, from Pará,—the latter of which has flowers still smaller than those of this species, and all are amongst the most minutely-flowered of known orchids.



H. Bolus del.

F. Hutch. Lith. Edin.

ANGRAECUM GERRARDI, *BOLUS*.

TAB. 7.

Tribe VANDEÆ.

Sub-tribe CYMBIDIÆ.

Genus ANGRÆCUM.

Angræcum Gerrardi, *Bolus*.—Herba epiphytica; caulis repens gracilis, 5–15 cm. longus, 2–3 mill. diametro; folia disticha ligulata, oblique emarginata, coriacea, 5–10 cm. longa; racemi flexuosi, foliis breviores, laxe 5–8-flori, bracteis minutis, flores cum ovariis 6–8 mill. longi; sepala lateralalia lanceolato-oblonga subobtusa concava; sepalum impar ovatum obtusissimum; petala late ovata vel suborbicularia, sepalis paullo breviora; labelli limbus transverse oblongus, obscure 3-lobus, lobo intermedio obtuse acuto, sepalis petalisque paullo longiore, calcare cylindrico, ore ampliato, obtuso crassiusculo, falcate-incurvo, 4 mill. longo; anthera rotundata obtusissima; pollinia 2, dissita, fere hemisphærica, singulum in stipite lineari plano incurvo in utroque margine rostellum recumbens; glandulis 2, ovatis distinctis; rostellum rostriforme cuneato-oblongum, apice in os calcaris deflexo. (*Ex exempl. plur. in glyc. servatis, exsiccatisque*). *Aeranthus Gerrardi*, *Reichenbach fil. in Flora for* 1867, p. 117; *Mystacidium Gerrardi*, *Bolus, in Journ. Linn. Soc. (Bot.)*, vol. xxv, p. 187 (1889).

Hab: South-eastern Region; NATAL: at or near Krans-Kop, *McKen*, 19, in herb. Kew!; *Gerrard*, 1819! in woods near Etshowe, fl. Febr.-March, *Mrs. Charles Saunders* (No. 6218 in my herb.)

Plate 7. The plant with smaller leaves is drawn from *Mrs. Saunders*'s, the one with larger leaves from *Gerrard*'s specimens at Kew; fig. 1, 2, flowers; 3, one of the side sepals; 4, odd sepal; 5, one of the petals; 6, lip,—all the foregoing magnified about 10 diameters; 7, column, front view; 8, ditto, the anther-lid lifted to show the pollinia; 9, ditto, side view; 10, pollinaria, side and front view,—all the latter variously magnified. [Note: It was not until after the figure was drawn and printed that I found from fresher specimens that the sepals and petals in the plant drawn had become withered and incurved, and that their natural position is spreading outward.]

An epiphytical herb; stem slender creeping, emitting roots at intervals throughout its length, 5–15 cm. long, 2–3 mill. in diameter; leaves distichous strap-shaped, unequally emarginate, leathery, 5–10 cm. long; racemes flexuous, shorter than the

leaves, loosely 5-8-fl., bracts minute, flowers, with the ovaries, 5-8 mill. long; side sepals lanceolate-oblong sub-obtuse concave; odd sepal ovate, very obtuse; petals broadly ovate or suborbicular, a little shorter than the sepals; limb of the lip transversely oblong, obscurely 3-lobed, intermediate lobe obtusely acute, a little longer than the sepals and petals; spur cylindrical, with a wide mouth, obtuse, incurved or hooked, 4-5 mill. long; anther rounded, very obtuse; pollinia 2, distant, nearly hemispherical, each upon a linear flat incurved stipes lying on either margin of the rostellum; glands 2, ovate, distant; rostellum beak-like cuneate-oblong, the apex bent down into the mouth of the spur.

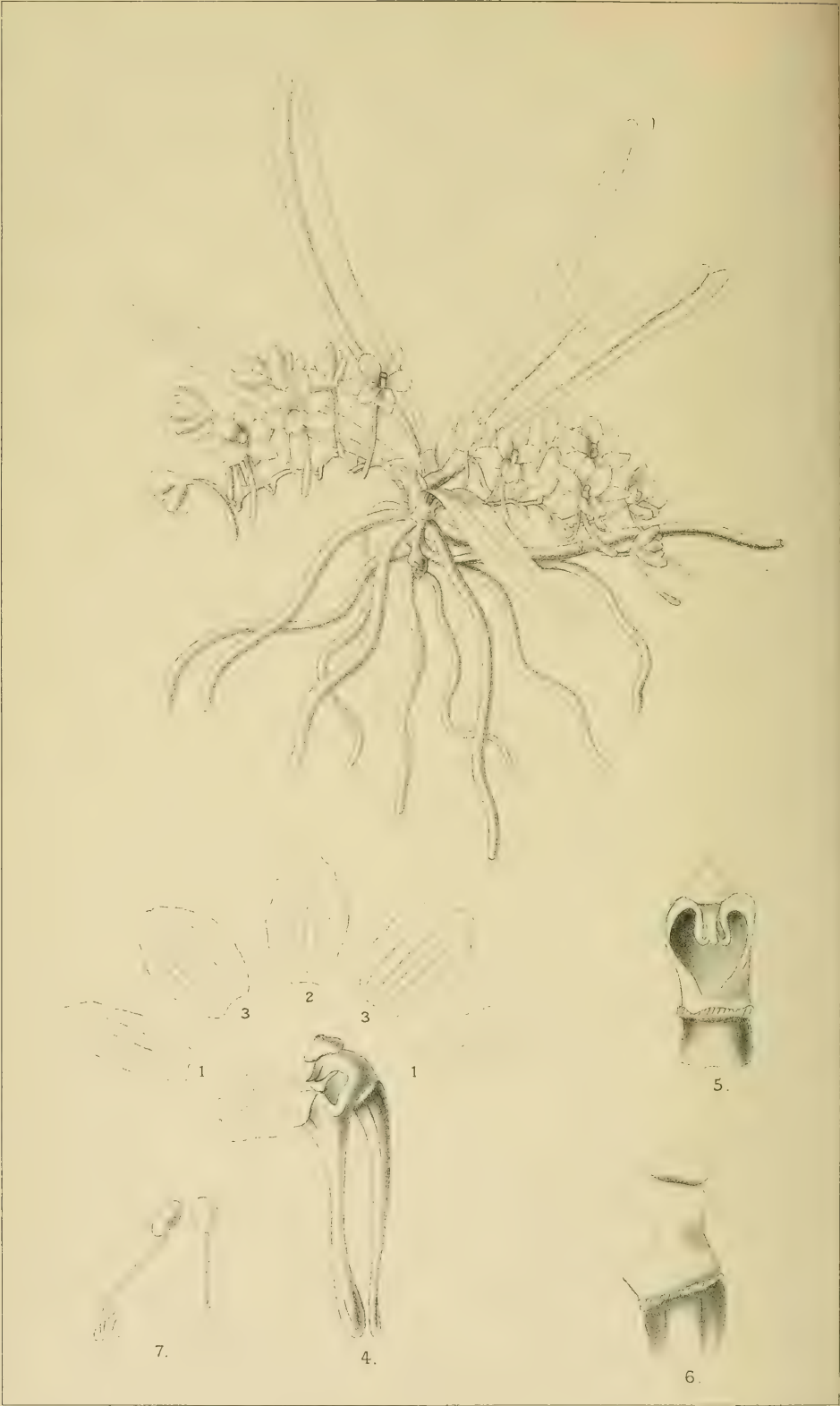
Described from several dried specimens and flowers preserved in glycerine. Flowers white or cream-coloured. This little species seems very well marked by its laxly few-flowered raceme, and the very much incurved blunt spur, large for the size of its small flower. Reichenbach placed the species in *Aeranthus*, and Bentham in *Mystacidium*. According to the definition of the latter author, the only constant difference between the two genera (*Angræcum* and *Mystacidium*) is that the stipes or stipites of the pollinia are flat in the first and filiform in the second. Even if this were to be regarded as a good character, the stipes in the present plant appears to be distinctly flat. Pfitzer, also, in *Die Natürliche Pflanzenfamilien* (vol. ii, pt. 6, p. 208) maintains *Mystacidium*, giving the chief distinction as follows:

Pollinia on a single common stipes . . . *Angræcum*

„ on 2 stipes, quite distinct or

united only by the glands . . . *Mystacidium*

This character appears to me of insufficient weight, and separates species otherwise very closely allied. Hooker in *Bot. Mag. tt.* 7161, 7204, has described and figured two *Angræcums*, the one with two widely separated stipes and glands, the other with the pollinia on two very short stipes and a single gland,—thus attributing no importance to this character. In the genera *Disa* and *Satyrium*, the latter of which especially, is very natural and closely defined, while the usual character is two glands, instances occur of species with a single gland, which few botanists would separate on that account. I think therefore upon the whole that *Mystacidium* cannot be maintained as distinct from *Angræcum*.



H. Bolus del.

F. Huth, Lith. Edin.

ANGRAECUM CAFFRUM, *BOLUS.*

TAB. 8.

Tribe VANDEÆ.

Sub-tribe CYMBIDIÆE.

Genus ANGRÆCUM.

Angræcum cafferum, *n. sp.*—Herba epiphytica; caulis repens, 2–3 cm. longus, radicibus numerosissimis; rami adscendentes abbreviati foliosi; folia 2–3, ligulata, oblique biloba, basi angustata, coriacea, 4–6 cm. longa; racemi dense 10–12-flori, rhachide rigida demum sæpe genuflexa, 2–3 cm. longi, bracteis minimis cucullatis persistentibus; sepala et petala obtusa 6 mill. longa; sepala lateralia oblonga, impar latius; petala late ovata, paullo majora; labelli limbus ovatus explanatus obtusus emarginatus, petalis paullo brevior, basi late infundibularis, sensim in calcar filiforme, apice sæpius inflatum, pendulum, ovario æquilongum vel brevius, productus; columna brevis, apice abrupte deflexa, rostello elongato ornithorhyncho; pollinia compresso-sphærico, caudiculis discretis filiformibus, glandulis pilosis basi applanatis; ovarium, cum pedicello gracillimo, 1.1 cm. longum (*Ex exempll. exsicc. plurib. ex. herb. Tyson ut infra*).

Hab: South-eastern Region; CAPE COLONY: Griqualand East near Fort Donald, on trunks of trees in woods, alt. about 1400 met., fl. Jan., IV. *Tyson*, 1607!; PONDOLAND, at Emagushen, fl. Jan., same collector, 2841!; NATAL: station not given, *Mrs. Saunders*!

Plate 8. Fig. 1, side sepals; 2, odd sepal; 3, petals; 4, lip,—all the foregoing magnified 3 diameters; 5, 6, column; 7, pollinaria,—all the latter variously magnified.

An epiphytical herb. Stem creeping, 2–3 cm. long, with numerous long roots; branches short ascending leafy; leaves 2–3, strap-shaped, obliquely bilobed, narrowed at base, leathery, 4–6 cm. long; racemes densely 10–12-fl., the rachis rigid frequently knee-bent, 2–3 cm. long, bracts very small, hooded, persistent; sepals and petals obtuse, 6 mill. long; side sepals oblong, the odd sepal wider; petals broadly ovate, a little larger than the sepals; limb of the lip ovate spreading obtuse emarginate, a little shorter than the petals, funnel-shaped at base and gradually produced into a filiform pendulous spur, usually a little inflated at the apex, as long as or a little shorter than the ovary; column short, abruptly deflexed at the apex;

rostellum elongate beaked ; pollinia spherical-compressed, on two distinct filiform caudicles, glands pilose, flattened at the base ; ovarium, with the very slender pedicel, 1.1 cm. long.

Described from several dried specimens of *Mr. Tyson*. Flowers white, something like those of *Mystacidium filicorne*, *Lindley*, but much smaller, the spur shorter in proportion, racemes shorter, and more closely flowered.



TAB. 9.

Tribe VANDEÆ.

Sub-tribe CYMBIDIÆ.

Genus ANGRÆCUM.

Angræcum Maudæ, *n. sp.*—Herba pusilla epiphytica; caulis abbreviatus, vix 1 cm. longus, radicibus plurimis filiformibus; folia 2–4, disticha, oblique lanceolata patentia vel falcato-recurva, obtuse acuta, coriacea crassa carnosae, 2–2.4 cm. longa; spicae plures, ex axillis foliorum delapsorum adscendentes, 3–5 cm. longae multiflorae (ad 15-fl.), bracteis membranaceis, inferioribus minoribus ad vaginas vacuas suberectas reductis, floralibus ovatis acuminatis patentibus floribus fere æquilongis eosque involventibus; flores sessiles, cum ovariis 6 mill. longi, perianthio patente, segmentis inter se subæquilongis; sepala lateraliter anguste lanceolata acuminata, basi subito arcuata, sursum fere recta; sepalum impar latius, acutum; petala lanceolata subundulata; labellum ovato-lanceolatum acuminatissimum, calcare cylindrico obtuso leviter incurvo, limbo tertia parte breviori; columna oblonga, sursum angustata; anthera subquadrata biloba; rostellum subulatum acuminatissimum uncinato-reflexum, apicem versus perforatum (ob glandulæ unicæ recipiendum?); pollinia elliptica, [stipes, glandulaque haud visæ]; capsula elliptica costata, 3.5 mill. longa. (*Ex exempl. 3 exsicc.*)

Hab: South-eastern Region; ZULULAND: Etshowe, fl. Febr., Mrs. Charles Saunders (No. 6270 in my herb.).

Plate 9. Fig. 1, flower; 2, one of the side sepals; 3, odd sepal; 4, one of the petals; 5, 6, lip from different flowers,—all the foregoing magnified about 10 diameters; 7–11, column; 12, rostellum; 13, one of the pollinia,—all the latter variously magnified.

A small epiphytical herb. Stem short, scarcely 1 cm. long, with many long filiform roots; leaves 2–4, distichous, obliquely lanceolate, spreading or falcate-recurved, obtusely acute, leathery thick and fleshy, 2–2.4 cm. long; spikes several, rising from the axils of fallen leaves, 3–5 cm. long, many-fl. (8–15-fl.), bracts membranous, the lower reduced to shorter sub-erect brown empty sheaths, the floral larger spreading ovate acuminate white, enwrapping the flower; flowers sessile, including the ovary about 6 mill. long, perianth spreading, its segments about

equally long; side sepals narrow lanceolate acuminate, obliquely and suddenly bowed or arched at the base, thence nearly straight; odd sepal broader, acute; petals lanceolate subundulate; lip ovate-lanceolate, very acuminate, spur cylindrical obtuse, slightly incurved, a third part shorter than the limb; column oblong, narrowed above; anther somewhat square, bilobed; rostellum subulate, very acuminate, bent downward and then sharply up-curved or hooked, perforate near the apex (for the reception of the single ? gland ?); pollinia elliptical [stipes and gland not seen]; capsule elliptical, ribbed, about 3·5 mill. long.

Described from 3 dried specimens as above; the flowers are evidently white, their small size in comparison with the large membranous bracts, seems to distinguish the species very well; there is nothing resembling it in the Kew herbarium. All the flowers I examined had lost the stipes and gland of the pollinarium; and I only found one pollinium which had lodged in the cavity of the stigma; but I infer from the perforate rostellum (which I have not observed in any other species) that there is probably only one gland. I have dedicated this highly interesting little species to its discoverer, Mrs. Charles Saunders, who is a diligent observer of Nature in the woods of Zululand, and has contributed several novelties to botanical science.



H. Bolus del.

F. Huth, Lith. Edin.

ANCRAECUM SACCIFERUM, LINDLEY.

TAB. 10.

Tribe VANDEÆ.

Sub-tribe CYMBIDIÆÆ.

Genus ANGRÆCUM.

Angræcum sacciferum, *Lindley in Comp. Bot. Mag.*, vol. ii, p. 205 (1836).—Herba epiphytica pusilla acaulis glabra 2-3 pollicaris; folia oblongo-lanceolata obtusa, oblique emarginata, coriacea, 1-nerva, 3-5 cm. longa; scapi numerosi axillares filiformes, 2-3-flori, foliis sublongiores, vaginis 2-3 remotis coloratis vestiti; bracteæ vaginæformes brunneæ; flores subsecundi, 4 mill. longi, internodiis subæquilongis, segmentis patenti-recurvis, inter se subæquilongis; sepala lateralialia lanceolata obtusa, impar ovatum; petala anguste lanceolata acuminata; labellum ovato-trullæforme obtusum valde carnosum, basi calcare inflato scrotiformi ovarium subequante præditum; columna perbrevis; pollinia glandulæ minimæ obovatæ affixa; ovarium torto-incurvum. (*Ex exempl. plur. viv.*)

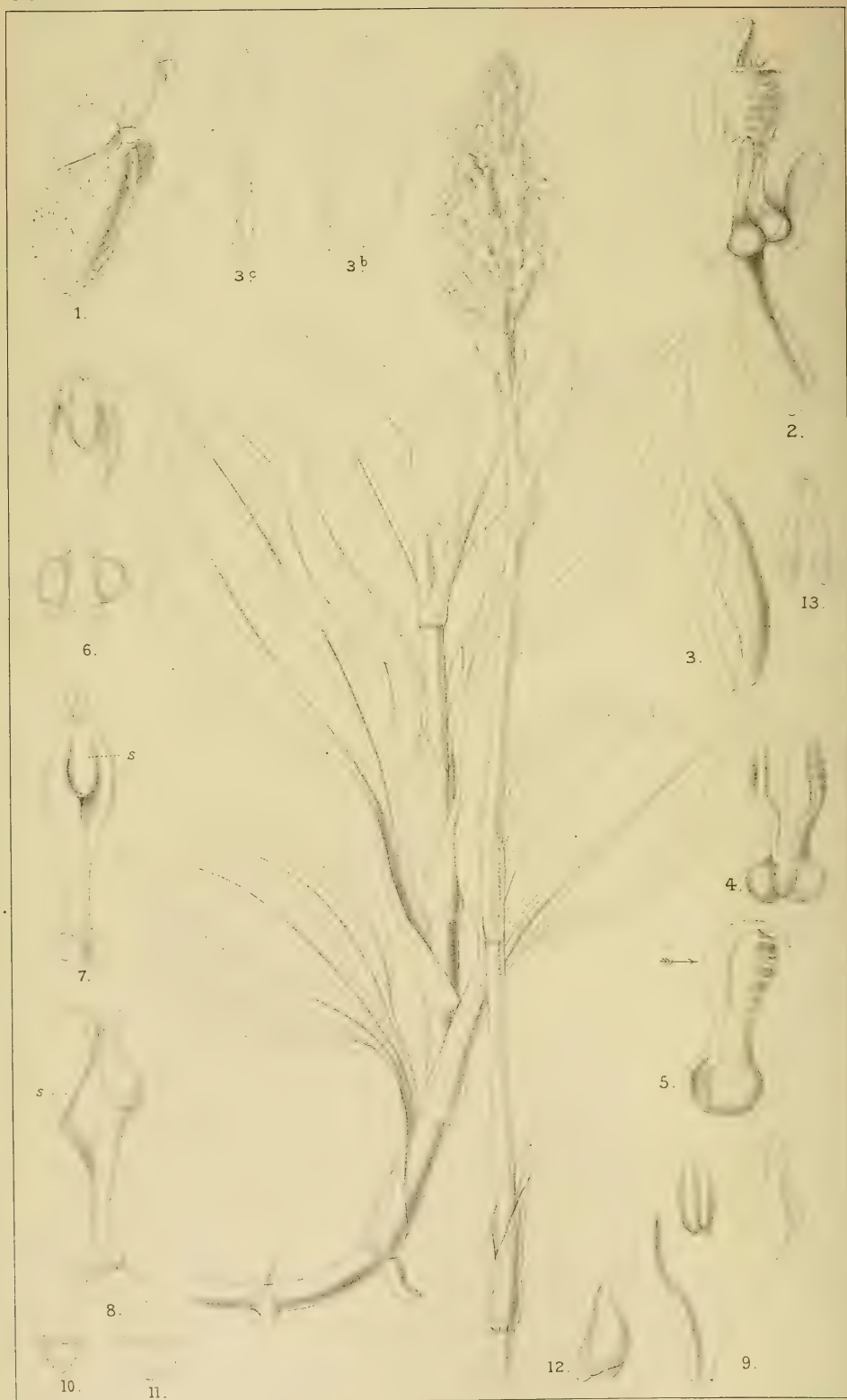
Hab: South-western Region; CAPE COLONY: Outeniquabergen, Koratra, in the forest, alt. below 300 met., fl. Sept., *Drège*, 8271a!; South-eastern Region; CAPE COLONY, Berg Plaats near Grahams-town, on stumps and branches of trees in deep ravines, alt. 700-800 met., fl. March, *J. Glass*!; between Kei and Bashee Rivers, alt. 300-600 met., fl. June, *Drège*, 8271b.!

Plate 10. Fig. 1a, a flowering scape detached, natural size; 1, 2, 3, flowers; 4, odd sepal; 5, side sepal; 6, petals; 7, lip, with column; 8, lip, detached; 9, column, front view; 10, ditto, side view; 11, anther, with lid lifted; 12, pollinarium,—all the latter figures variously magnified.

A small epiphytical stemless glabrous herb, 4-7 cm. long; leaves oblong-lanceolate obtuse, obliquely emarginate, coriaceous, 1-nerved, 3-5 cm. long; scapes numerous axillary filiform 2-3-fl., equalling or longer than the leaves, bearing 2-3 remote brown sheaths; bracts sheath-like brownish; flowers often secund about 4 mill. long, about as long as the internodes, the segments spreading-recurved, all about equally long; side sepals lanceolate obtuse, the odd sepal ovate; petals narrow lanceolate acuminate; lip ovate trowel-shaped, obtuse thick fleshy, produced at base into a rather large bag-shaped inflated spur reaching nearly to

the base of the ovary; column very short; pollinia affixed to a very small obovate gland; ovary twisted incurved.

Described from numerous living plants received from Mr. J. Glass, from one of which the drawing was made. Colour of flowers greenish-yellow, leaves dark green. A very distinct little species, first gathered more than sixty years ago by Drège, whose type specimens I have seen in herb. Lindley at Kew.



H. Bolus del.

F. Huth, Lith. Edin?

PLATYLEPIS GLANDULOSA, REICHENBACH FIL.

TAB. 11.

Tribe NEOTTIEÆ.

Sub-tribe SPIRANTHEÆ.

Genus PLATYLEPIS.

Platylepis glandulosa, *Reichenbach fil.*, in *Linnaea*, vol. xli, p. 62 (1877).—Herba decumbens, rhizomate repente, 35–50 cm. alta. Radices tuberosæ cylindricæ lanosæ; caulis laxè foliosus; folia 4–8, petiolata ovata acutissima reticulato-venosa, petiolo basi dilatato vaginante, cum petiolo (4 cm.) 12·5 cm. longa; spica cylindrica, dense multiflora, 10–13 cm. longa, bracteis late ovatis concavis, dense glanduloso-villosis, ovariis subæquilongis; flores parvi glabri, vel sepalo impari dorso glanduloso; sepala lateralìa libera oblonga subacuta, basi gibbosa, adscendentia deinde dimidio longitudinis reflexa, circè 8 mill. longa; sepalum impar cum petalis lineari-spathulatis adherentibus lanceolato-cucullatum, subacutum erectum, lateralibus æquilongum; labellum anticum erectum ovatum cucullatum, apice contracto acuto recurvo, extus verruculosum, marginibus in tubo columnæ duas tertias partes suæ longitudinis adharens, eique subæqualis, basi bigibbum, gibbo utroque intus callo orbiculari colorato ornato; columna erecta hemicylindrica tubulosa hyalina, apice in rostellum anticum bilobum productum, lobis erectis falcato-subulatis, basi in mentum minutum producta; anthera pone rostellum in tubo columnæ semi-immersa erecta lanceolata, loculis distinctis; pollinia granulosa in caudiculas duas pendula, glandula minutissima; stigma infra rostellum anticum hippocrepiforme pulvinatum, membrana angusta marginatum; capsula oblonga, 9 mill. longa. (*Ex exempl. plur. exsicc., floribusque in glycer. servatis.*) *Notiophrys glandulosa*, *Lindley*, in *Journ. Linn. Soc.* vol. vi, p. 133 (1862); *Diplogastra angolensis*, *Welwitsch*, in *Flora* (1865) p. 183.

Hab: South-eastern Region; NATAL: in swampy places on the shores of the Bay of Natal, fl. Febr., *J. M. Wood*, 4122!; *J. Sanderson*, 1048.—Also recorded from Prince's Island, *Barter*, 1952; and Golungo Alto, West Africa, *Welwitsch*.

Plate 11. Fig. 1, flower, with bract, magnified about 3 diameters; 2, flower; 3, odd sepal with petals; 3*b*, ditto, slightly opened, front view; 3*c*, one of the petals detached; 4, lip; 5, ditto, the arrow marks the limit of adhesion to the column,—all the latter magnified 4 diameters; 6, column with lip, posterior view; 7, column, anterior view; 8, ditto, side view; 9, ditto, the tube opened, showing anther attached inside; 10, section of column near the base; 11, ditto near the summit; 12, anther, side view, with fragment of column; 13, pollinia,—all the last variously magnified; *s*, indicates the stigma.

A decumbent herb with creeping rhizome, 35–50 cm. high; tuberous roots cylindrical woolly; stem loosely leafy; leaves 4–8, petiolate ovate, very acute, netted-veined, petiole dilated and sheathing at base, including the petiole 12·5 cm. long; spike cylindrical, densely many-fl.,

10-13 cm. long, bracts broadly ovate concave, densely glandular-hairy, about as long as the ovaries, flowers small glabrous; side sepals free oblong sub-acute, gibbous at the base, ascending and then reflexed, about 8 mill. long; odd sepal together with the adherent linear-spathulate petals forming a lanceolate subacute erect hood, as long as the side sepals; lip anticus erect ovate hooded, apex contracted acute recurved, covered with minute warty protuberances on the outer side, the margins adhering to the column for two-thirds of its length and about equalling it in length, bigibbous at the base, each gibbosity furnished within with a round coloured callus; column erect hemicylindrical tubular hyaline, produced at the apex into an anticus bilobed rostellum, lobes erect falcate-subulate, produced into a minute foot at base; anther situate behind the rostellum, semi-immersed in the tube of the column, erect lanceolate, cells distinct; pollinia granular, pendulous on 2 caudicles, gland very minute; stigma anticus, immediately below the rostellum, horse-shoe-shaped, cushioned, margined by a narrow membrane; capsule oblong, 9 mill. long.

Described from several excellent dried specimens of Wood, the flowers analysed and drawn from specimens freshly preserved in glycerine. Colour of the flowers according to Wood "greenish-yellow," ("brownish" according to Barter). I have hesitated for some time as to the genus of this plant. When it was first sent to Kew by Mr. Wood it was named *Spiranthes* by Mr. N. E. Brown, who considered that *Platylepis* should be entirely removed to that genus. In looking at the fine figure of *Neottia speciosa* in Jacquin's *Icones Plant. Rar.* t. 600, I was immediately struck by the strong resemblance in general type of the column of that plant to the one now treated of, and I think it probable that, dissimilar as they are in other respects, these two species must find their ultimate place in the same genus. The tubular character of the column (a tube quite independent of, and included within, the partial tube formed by its union with the lip) in both is very remarkable; and this appears to me to be of more importance than the relative length of that organ, and also more than differences in the perianth, or in the habit. Richard, and Lindley following him, removed *Neottia speciosa* to *Stenorhynchus* as *S. speciosus*, Lindley expressly stating that after much consideration he had determined upon regarding it as distinct from *Spiranthes*. Bentham, however (*Gen. Plant.* iii, p. 596) included *Stenorhynchus* in *Spiranthes* as a section of the latter genus. Pfitzer (*Natuerliche Pflanzenfamilien* ii, 6, pp. 112, 115) maintains both *Stenorhynchus* and *Platylepis*, though in different subtribes of his *Neottiineæ*, including *S. speciosus*, *Rich.* in the former, and, apparently, our present plant in the latter. It appears to me that both of these differ too widely from the European species of *Spiranthes* to be joined with them generically. No doubt the proper location and arrangement of many of these smaller genera can only be effected after a careful dissection of all of them, with ample material, when quite possibly our present plant may be fitly joined with *Stenorhynchus*, or even with *Goodyera*. Meantime, to avoid a new name which may probably have to be altered, I have thought it best to adopt Reichenbach's last published name. My friend Mr. C. B. Clarke, of Kew, who was also kind enough to look into this matter for me, points out that the nearest ally of the present species is *Platylepis goodyeroides*, *Reichenbach fil.*



H. Bolus del.

F. Bolus lith.

POGONIA PURPURATA, REICHENBACH FIL.

TAB. 12.

Tribe NEOTTIEÆ.

Sub-tribe ARETHUSEÆ.

Genus POGONIA (§ NERVILIA).

Pogonia purpurata, *Reichenbach fil. et Sonder in Flora*, 1865, p. 184.—Herba glabra erecta, 15–23 cm. alta; tuber sphæricum vel ovoideum; caulis floriferus simplex aphyllus, vaginis brevibus 2–3 vestitus; folium unicum serotinum e gemma distincta tuberis ejusdem, petiolatum ovatum acutum multinerve plicatum, cum petiolo 2·5 cm. longo, fere 10 cm. longum; racemus laxè 3–4-florus, flores patentes, bracteæ anguste lineares membranaceæ, floribus breviores; sepala petalaeque subæqualia subconformia lanceolata acuminata patentia venosa, circa 1·6 cm. longa, vel petala paullo breviora latioraque; labellum inferum petalis subæquilongum cuneato-obovatum venosum, lineis 3 callosis percursum, apice trilobum, lobis lateralibus brevioribus rotundatis vel subacutis incurvis, lobo intermedio longiore subulato acuto deflexo; columna pede elongato, labello brevior; anthera apice columnæ affixa incumbens; pollinia in loculis — ?, granulis solutis; capsula ovoidea pendula 1·2 cm. longa. (*Ex exempll. plur. exsicc. sub. num. Culveri* 57.)

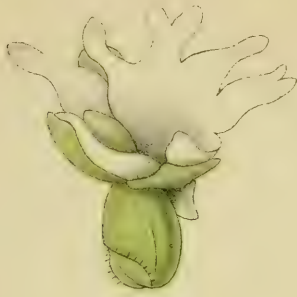
Hab: South-eastern Region; TRANS-VAAL REPUBLIC: mountain sides near Orotava Mine, Barberton, alt. 1230 meters, fl. Nov., *W. Culver*, 57! (in my herb.)

Plate 12. Fig. 1, flower and bract; 2, one of the sepals; 3, one of the petals; 4, lip, partly flattened out,—all the foregoing magnified 2 diameters; 5, column, front view; 6, ditto, side view; 7, ditto, the upper part, showing the anther lid pulled out on its hinge; 8, front view of the anther; 9, diagrammatic section of the lip, showing the median callus or crest; 10, section of the anther; 11, pollen granules,—all the latter variously magnified.

A glabrous erect herb, 15–23 cm. high; tuber spherical or ovoid; flowering stem simple leafless, furnished with 2–3 short distant sheaths; leaf solitary from a separate bud of the same tuber, appearing after the flowers are withered, petiolate ovate acute plicate, including the petiole of 2·5 cm. long about 10 cm. in length; raceme loosely 3–4 flowered, flowers spreading, bracts narrow linear membranous, shorter than the flowers; sepals and

petals similar, nearly equal in length, lanceolate acuminate spreading veined, about 1·6 cm. long, or the petals a little shorter and broader; lip inferior, nearly as long as the petals, cuneate-obovate veined, traversed by three raised ridges, 3-lobed towards the apex, the side lobes shorter, rounded or acute, ascending, the intermediate lobe longer subulate acute deflexed; foot of the column elongated, shorter than the lip; anther incumbent affixed to the apex of the column by a hinge-like joint; pollinia — ? (only seen in the numerous separated roundish granules); capsule ovoid pendulous, 1·2 cm. long.

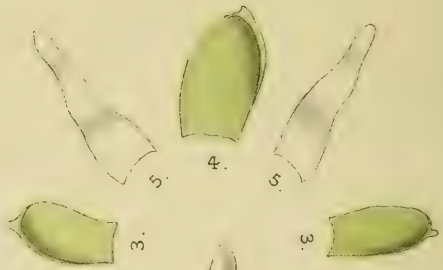
Described and drawn from several dried specimens, with separately and carefully dried flowers and notes of colour from the collector. Colour of the sepals and petals pale greenish yellow with brownish green veins; the lip veined with purple. The original description was based upon a plant in Sonder's herbarium supposed to have been found in the Magaliesbergen, whence we may infer that it was most probably collected by Zeyher, during the journey made by him to the Trans-Vaal with Burke (a collector sent out by the Earl of Derby) in 1841. I have not seen any authenticated specimen, but as Mr. Culver's excellent specimens agree very well with Reichenbach's brief description, as far as the latter goes, and as it is the only *Pogonia* known from South Africa, I have very little doubt as to their identity. Mr. Culver has been very successful in collecting the Orchids of that region; he is the only one who has found this species since Zeyher, and I am indebted to him for several other rare and novel species.



1.



2.



3.

4.

5.

6.

6.



7.



8.

TAB. 13.

Tribe OPHRYDEÆ.

Sub-tribe HABENARIEÆ.

Genus HOLOTHRIX.

Holothrix Mundtii, *Sonder in Linnæa*, vol. xix, p. 77 (1847).—Herba erecta gracilis, 7–15 cm. alta; tubera globosa vel ovoidea, lana coacta vestita; folia 2 radicalia ovata acuta glabra, margine ciliata, inferum late ovatum vel suborbiculare, superum minus, ovatum; scapus gracillimus pilosus, pilis brunneis deorsum densioribus, 4–9-florus, flores minuti adscendentes quaquaversi; bractæ ovatæ cuspidatæ pilosæ, ovariis multo breviores; sepala glabra oblonga obtusa, petalis breviores; petala ovato-oblonga, obtuse acuta, labello breviora; labellum circumscriptione fere orbiculari, vel “cuneatum” (*Sonder*), subæqualiter 5-fidum, lobo intermedio spathulato, jugis superioribus lobulatis, inferioribus integris, calcare conico abbreviato subrecto; ovarium glabrum rectum, vel “tortum” (*Sonder*). (*Ex exempl. plur. viv.*)

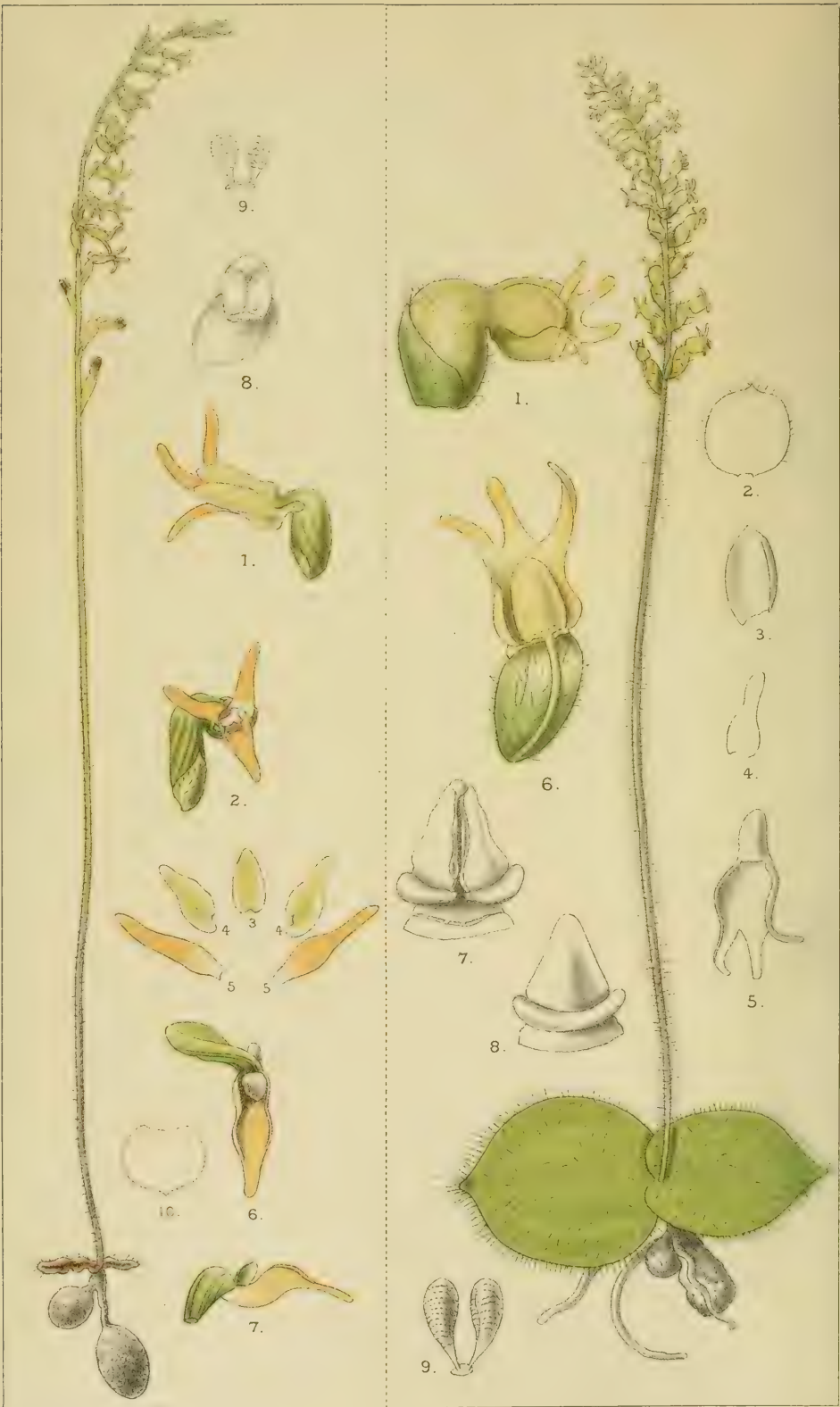
Hab: **South western Region**; CAPE COLONY: sandy banks under pine-trees, about 2 miles east of Rondebosch on the Cape Peninsula, alt. about 18 meters, early October, *Bolus*, 4971; under ‘silver-trees’ on Wynberg Hill, *Miss Hoskyns-Abraham*; Swellendam, *Mundt*; Winterhoeksberg, near Tulbagh, alt. between 700 and 1100 meters, Nov., *Zeyher*.

Plate 13. Fig. 1, 2, flowers,—magnified about 6 diameters; 3, side sepals; 4, odd sepal; 5, petals; 6, lip; 7, column; 8, bract,—all the latter variously magnified.

An erect slender herb, 7–15 cm. high; tubers globose or ovoid, matted with fine hairs; leaves 2, radical, the lower broadly ovate or sub-rotund, the upper smaller ovate, both acute glabrous ciliolate; scape pilose with rather short brown hairs which are thinly placed above but more thickly below, 4–9-flowered, flowers minute, somewhat erect, turned in every direction; bract ovate cuspidate pilose, very much shorter than the ovary; sepals oblong obtuse glabrous, shorter than the petals; petals ovate-oblong, obtusely pointed, shorter than the lip; lip nearly orbicular in outline, or “cuneate” (*Sonder*), cleft into five nearly equal segments of which the intermediate one is spathulate, the

upper pair bilobed, all somewhat obtuse, with a short straight conical spur at base; ovary glabrous straight, or "twisted" (*Sonder*).

Described from the living specimens first above mentioned. The petals are pure white. The glabrous leaves are somewhat unusual in the genus. The flowers apparently vary in size; those I saw in a living state were about 5 mill. long. *Sonder*, whose descriptions I have always found very trustworthy, says that the petals are three times as long as the sepals, which I did not find in my specimens. His description was based on the specimens of *Mundt* and *Zeyher*. About Cape Town the species appears to be somewhat rare.



H. Bolus del

A.

HOLOTHRIX EXILIS, LINDLEY, var.

B.

F. Huth, Lith? Edin?

H. VILLOSA, LINDLEY.

TAB. 14.

Tribe OPHRYDEÆ.

Sub-tribe HABENARIÆ.

Genus HOLOTHRIX.

Holothrix exilis, *Lindley, Gen. & Sp. Orch. p. 283 (1837).*—var. **brachylabris**, *Sonder, in Linnaea, vol. xix, p. 78 (1847).*—Tubera ovata glabra; folia bina glabra, vel parce pilosa, ciliolata, ante anthesin emarcida, inferum radicale humistratum, ovatum vel orbiculare, carnosum venosum, circa 1 cm. longum, superum caulinum minimum lanceolatum; scapus erectus gracillimus, 15–25 cm. longus, inferne patentim pilosus, sursum glabrescens; spica multiflora (8–17-fl.), plerumque secunda, 4–6 cm. longa; bracteæ ovatæ acutæ margine apiceque pilosæ, ovario breviores vel æquilongæ (*Sonder*); flores glabri, 4 mill. longi; sepalum impar ovatum, lateralia oblique ovato-lanceolata obtusa; petala anguste lanceolata obtusa, sepalis duplo longiora; labellum indivisum lanceolatum, petalis æquilongum, basi ampliatum concavum, calcare sepalis multo breviori; anthera oblonga suberecta, loculis parallelis; caudiculæ in glandulam unicam linearem transversam desinentes; ovarium oblongum ovatumve tortum. (*Ex exempl. plur. viv.*)

Hab: South-western Region; CAPE COLONY: Table Mt., Cape Peninsula, alt. 700 met., Febr., *R. Schlechter*, 81; near Riversdale, fl. Nov., *ib.*—South-eastern Region; CAPE COLONY: Uitenhage, *Zeyher*; Coldstream Farm near Grahamstown, alt. 700 met., Febr., *J. Glass*, (*Herb. Norm. Austr.-Afr.*, 1870).

Plate 14, A. Fig. 1, flower, side view; 2, ditto, front view; 3, odd sepal; 4, side sepals; 5, petals; 6, lip; 7, ditto, with ovary, side view,—all the foregoing magnified about 5 diameters; 8, column, with ovary; 9, pollinarium,—all the latter variously magnified; 10, lower leaf, natural size.

Tubers ovate glabrous; leaves two, glabrous or thinly pilose, ciliate, withered before flowering, the lower radical lying flat on the ground, ovate or orbicular, fleshy veined, about 1 cm. long, the upper cauline very small lanceolate; scape erect very slender, 15–25 cm. long, patently pilose below, becoming glabrous above; spike many-fl. (8–17-fl.), generally secund or nearly so, 4–6 cm. long; bracts ovate acute erect, pilose on the margin and apex, shorter than or equalling the ovary; flowers glabrous, 4 mill. long; odd sepal ovate, side sepals obliquely ovate-lanceolate obtuse; petals narrow lanceolate obtuse, twice as long as the sepals; lip undivided lanceolate, as long as the petals, widened and concave at the base, spur much shorter than the sepals; anther oblong sub-erect, cells parallel; caudicles of the pollinia terminating in a single gland; ovary oblong or ovate, twisted.

Described from numerous living specimens kindly sent by Mr. Glass from near Grahamstown. These were the first I had seen; yet by a curious coincidence Mr. R. Schlechter found, during the same week a single specimen on Table Mt., near Cape Town, where it had never previously been recorded. He also found on the same mountain a single plant of the typical form. The variety here described does not appear to differ from the typical form as described by Lindley, (founded on *Burchell's* 6738 from the Riversdale district, 17th Nov., 1814) excepting in the lip which is entire, while Lindley found it with a basal lobe on either side. But Mr. Schlechter subsequently found also at Riversdale plants having a lip intermediate in form between the two. Though I have not examined living specimens of the typical form I can hardly doubt that *Sonder's* species is a mere variety. I have not seen an authentic specimen of the latter, but our plants agree well with his description. The sepals are green with a pale margin, the petals deep ochraceous yellow.

Holothrix villosa, *Lindley in Comp. Bot. Mag.*, vol. ii, p. 207 (1836).—Tubera ovata vel oblonga, lana intertexta vestita; folia bina radicalia humistrata, interdum carnosa, inferum orbiculare, 3–5 cm. diam., superum minus, supra marginibusque pilis longis mollis vestita, subtus glabra; scapus erectus gracilis, 15–30 cm. longus patentim pilosus; spica multiflora, floribus quaquaversis; bracteæ ovatæ acuminatæ pilosæ, ovario breviores; flores glabri, circa 3 mill. longi; sepalum impar suborbiculare, obtuse acutum, lateralia late ovata; petala linearia, basi latiora, obtusa, sepalis paullo longiora; labellum circumscriptione ovata, trifidum concavum, segmentis linearibus obtusis subæquilongis, petala superantibus; calcar conicum rectum, sepalis brevius; columna subconica obtusa; pollinium caudiculæ in glandulam unicum ellipticam desinentes. (*Ex exempll. plur. viv.*)

Hab: **South-western Region;** CAPE COLONY: Cape Peninsula, on the Flats and on Table Mt., amongst bushes, alt. from 20 up to 750 meters, fl. Sept.–Nov., *Bolus*, 3929, 4655; *Paarl*, *Drège*, 1253*b*; *Piquetberg* &c.—**South-eastern Region;** CAPE COLONY: Cave Mt., near Graaff Reinet, alt. 1350 met., rare, *Bolus*; *Boschberg*, near Somerset East, *MacOwan*; near Grahamstown, Sept., *Souter*, (*ex Schoenland* 402.)

Plate 14, B. Fig. 1, flower with bract, side view; 2, odd sepal; 3, one of the side sepals; 4, one of the petals; 5, lip,—all the foregoing magnified about 6 diameters; 6, ovary and column with lip; 7, column, front view; 8, column, back view; 9, pollinarium,—all the latter variously magnified.

Tubers ovate or oblong, clothed with interwoven woolly hairs; leaves 2, radical, lying flat on the ground, sometimes fleshy, the lower orbicular, 3–5 cm. long and wide, the upper smaller ovate acute, the upper surface and margins as also the scape and bracts, clothed with long soft brownish spreading hairs; scape erect, straight or curved, 15–30 cm. long; spike many-fl., the flowers turned in every direction; bracts ovate acuminate shorter than the ovary; flowers glabrous, about 3 mill. long; odd sepal nearly orbicular, obtusely acute, side sepals broadly ovate; petals linear, widened at the base, obtuse, a little longer than the sepals; lip ovate in outline, concave, 3-fid, the segments linear obtuse, a little longer than the petals, spur conical straight, shorter than the sepals; column somewhat conical, obtuse; caudicles of the pollinia terminating in a single gland.

Described from numerous living and dried specimens. Colour of the petals and lip ochraceous yellow. The species is well distinguished by its particularly long and soft indument; and though dried specimens may sometimes resemble some forms of *H. squamulosa*, *Lindley*, (*Bolus*, *Orchids of the Cape Peninsula*, t. 23) the latter may always be known by the 5- or 7-fid lip and the slenderer curved spur. It appears to be a widely distributed plant, and about Cape Town, at least, is frequently to be seen every year.



H. Bolus del.

HABENARIA DREGEANA, LINDLEY.

TAB. 15.

Tribe OPHRYDEÆ.
Sub-tribe HABENARIÆÆ.
Genus HABENARIA.

Habenaria Dregeana, *Lindley, in Ann. Nat. Hist. vol. iv, p. 314* (1840).—Herba erecta, spithamæa ad pedalem vel ultra. Caulis subrigidus, bracteis foliaceis subulatis acuminatis dense vestitus; folia 2, radicalia humistrata suborbicularia acuta, inferum 4–6 cm. longum, superum minus; spica dense multiflora, cylindrica, 3–5 cm. longa; sepala lateralibus oblique lanceolata, acuminata patentia, circa 7 mill. longa; sepalum impar erectum ovatum acuminatum concavum æquilongum; petala fere ad basin bipartita ciliolata, segmentum posticum lanceolatum, in margine sepali imparis adhærens, anticum lineare erecto-patens, brevius vel æquilongum; labellum tripartitum vel trilobum, sub-carnosum, segmentis lateralibus lineari-subulatis, interdum ciliolatis, intermedio conformi vel paullo latiore, longiore, calcare filiformi pendulo apicem versus inflato circa 1 cm. longo; clinandrium subeucullatum breve obtusissimum, rostellum breve, brachiis adscendentibus, basi tuberculo majusculo in utroque latere præditum; processus stigmatiferi recti porrecti, brachia rostellum superantes. (*Ex exemplari unico vivente, pluribusque exsiccatis.*)

Var. Tysoni: spica laxiflora; petali segmentum posticum lineare, segmentum anticum eo longius deflexumque; labelli segmentis lateralibus intermedio longioribus; processus stigmatiferi incurvi. *H. Tysoni, mihi, in Journ. Linn. Soc. (Bot.) vol. xxv, p. 166, fig. 4.*

Hab: South-eastern Region; CAPE COLONY: near the Dohne, King William's Town, Febr., *T. R. Sim*; Grahamstown, Nov., *Read*; Boschberg, near Somerset East, alt. 1200 met., Dec.–Febr., *MacOwan*, 767; Komgha, March, *Flanagan*, 521; Bazija, alt. 600 met., *Baur*, 815.—NATAL: Inanda, Jan., *Wood*, 815; *Gerrard*, 1811; *Sanderson*, 487.—TRANS-VAAL REPUBLIC: near Barberton, alt. 975 met., Febr., *Culver*, 45.

Var. Tysoni, grassy places Mt. Currie, near Kokstad, Griqualand East, alt. 1850 met., Febr., *Tyson*, 1068 partly (other specimens under the same number, but from a different station, are the typical form). NATAL: Sterk Spruit, *J. Sanderson*, 2.

Plate 15. Fig. 1, flower front view; 2, ditto, side view; 3, odd sepal; 4, one of the side sepals; 5, petal, the anterior part to

the right,—all the foregoing magnified about 3 diameters; 6, 7, column, magnified; 8, a petal from *Culver's* no. 45, magnified 3 diam.; 9, petal, and 10, lip of var. *Tysoni*, from *Tyson's* 1068.

Erect, from a span to a foot or more in height. Stem rather straight and rigid, covered from the base with subulate acuminate leaf-like bracts; leaves 2, radical, appressed to the ground, orbicular with a short acute point, the lower 4–6 cm. long, the upper smaller, spike densely many-fl., cylindrical, 3–5 cm. long; side sepals obliquely lanceolate acuminate spreading, about 7 mill. long; odd sepal erect ovate acuminate concave, equally long; petals bipartite nearly to the base, ciliolate, the posterior segment adherent to the margin of the odd sepal, lanceolate, anterior segment linear spreading, shorter than or as long as the anterior; lip 3-partite or 3-lobed, rather fleshy, the middle lobe linear-subulate, usually longer than the similar or narrower and sometimes ciliolate side lobes, spur filiform pendulous somewhat inflated towards its apex, about 1 cm. long; clinandrium somewhat hooded, short, very obtuse, rostellum short with ascending arms, furnished with a rather large tubercle on either side at base; stigmatiferous processes straight, protruding, longer than the rostellary arms.

Described from several living and dried specimens. Colour of the flowers pale green, the anther greenish-yellow. A well-marked though variable species, one of its extreme forms being that which I formerly described as *H. Tysoni*, but which, after seeing and dissecting a larger number of specimens, I now believe should be regarded as a variety merely. The fine closely-set segments of the petals and lip give the spike a mossy appearance, or, as was suggested by another observer, the look of a number of those green web-less spiders which await their prey at the bottom of flowers.



H. Bolus del.

F. Kuth, Lith^r Edin^r

HABENARIA TETRAPETALA, REICHENBACH FIL.

TAB. 16.

Tribe OPHRYDEÆ.

Sub-tribe HABENARIÆ.

Genus HABENARIA.

Habenaria tetrapetala, *Reichenbach fil.*, in *Flora* p. 180 (1865).—Herba erecta glabra, 30–90 cm. alta. Caulis pauci- vel dense multifoliosus; folia plura valida sub-erecta, vel pauca laxaque, anguste lanceolata acuta, basi vaginantia nervata, sensim in bracteas foliaceas abeuntia; racemus oblongus, laxe multiflorus, 5–6 cm. diam.; flores patentes; bracteæ anguste lanceolatæ acuminatæ, ovariis breviores; sepala lateralialia oblique ovata obtusa apiculata reflexa, circa 8 mill. longa; sepalum impar oblanceolatum obtusum concavum erectum æquilongum; petala fere ad basin bipartita, segmentum posterius lineare erectum, sepalo impari sæpius æquilongum, segmentum anterius multo brevius ovatum vel ovato-lanceolatum obtusum basi breviter unguiculatum; labellum tripartitum, segmentis linearibus, intermedio circa 8–9 mill. longo, lateralibus brevioribus latioribus, divaricato-patentibus, calcare filiformi, apicem versus inflato, pedicellum cum ovario paullo superante; clinandrium breve ovatum concavum erectum; rostellum inter plicas erectum subulatum acuminatum, basi in brachia recta vel subincurva protrusa productum; processus stigmatiferi clavati, brachiis rostellaribus subæquilongi; ovarium cum pedicello curvum 2·5–3 cm. longum. (*Ex exempll. 2 viv., pluribusque exsiccatis*). *Bilabrella falcicornis*, Lindley, *Bot. Reg.*, sub t. 1701 (1835); *Bonatea bilabrella*, Lindley, *Gen & Sp. Orch.* p. 328 (1835); *B. tetrapetala*, Lindley, in *Comp. Bot. Mag.*, vol. ii, p. 208 (1836); *H. falciformis*, Bolus, in *Journ. Linn. Soc. (Bot.)* vol. xix, p. 340 (1882); *H. tetramera*, Bolus, *ib.* p. 340 (1882).

Hab: South-eastern Region; CAPE COLONY: Knysna; Van Staden's Berg, *Ecklon & Zeyher*; Zuurbergen, Febr., *Hallack*; Coldstream, near Grahamstown, March, *Glass*; marshy places near Kokstad, alt. 1540 met., Febr., *Tyson* 1071 (*Herb. Norm. Aust.-Afr.* 477).—PONDOLAND: near St. Andrew's Mission Station, alt. 300 met. *Tyson*, 3080.—NATAL: *McKen & Gerrard*, 11.—TRANS-VAAL REPUBLIC: grassy mt. sides near Barberton, alt. 1475 met., Mch.–Apr., *Galpin*, 877.

Plate 16. Fig. 1, flower, front view; 2, ditto, side view, both magnified 2 diameters; 3, odd sepal; 4, side sepal; 5, petal,—all the latter magnified about 3 diam.; 6, column, front view; 7, ditto, side

view,—the last two variously magnified.—Note : figs. 1 and 2 are from young and rather small flowers, and the spur has not yet become inflated.

Erect, glabrous, 30–90 cm. high ; stem sparingly, or sometimes densely, leafy ; leaves several, stiff, rather erect, or sometimes few and lax, lanceolate, acute, strongly nerved, passing into similar gradually smaller sheaths and bracts ; raceme oblong, laxly many-fl., 5–6 cm. in diameter, flowers spreading, bracts narrow lanceolate acuminate, shorter than the ovaries ; side sepals obliquely ovate, obtuse apiculate reflexed, about 8 mill. long ; odd sepal oblanceolate obtuse concave erect, equally long ; petals bipartite nearly to the base, posterior segment linear erect, as long as the odd sepal, anterior much shorter, broadly ovate or nearly lanceolate obtuse, shortly clawed ; lip tripartite, segments linear, the intermediate about 8–9 mill. long, the lateral broader, shorter and divaricately spreading, spur filiform inflated towards the apex, somewhat longer than the pedicel and ovary ; clinandrium short ovate concave erect ; rostellum closely set within its fold, erect subulate acuminate, produced at base into two nearly straight projecting arms ; stigmatic processes club-shaped, projecting, about as long as the rostellary arms ; ovary with pedicel curved, 2·5–3 cm. long.

Described from 2 living, and several dried specimens. The flowers are light green and fragrant. The species is widely distributed and tolerably easy to distinguish. The petals vary a little in the relative breadth and length of their segments.



TAB. 17.

Tribe OPHRYDEÆ.

Sub-tribe HABENARIÆÆ.

Genus HABENARIA.

Habenaria Galpini, *n. sp.*—Erecta vel decumbens, 20 cm. alta. Caulis foliosus, folia 6-8 sparsa lanceolata acuminata erecto-patentia, 5-6 cm. longa, superiora sensim minora in bracteas abeuntia; racemus sub-laxe multiflorus, 11 cm. longus, bracteis lineari-lanceolatis pubescentibus, pedicellos parum superantibus; sepala lateralibus obovata obtusa, oblique apiculata, circa 6 mill. longa; sepalum impar ovatum concavum nervosum, extus scabridum, 5 mill. longum; petala bipartita, segmento posteriori lineari acuto erecto, 5 mill. longo, segmento anteriori subulato acuto patente, 8 mill. longo; labellum 3-partitum, segmentis linearibus patentibus, intermedio 1 cm. longo, lateralibus 7 mill. longis, calcare filiformi pendulo incurvo, deorsum sensim inflato, 1.8-2 cm. longo; clinandrium parvum subsphæricum obtusum apiculatum, utroque latere basi tuberculoso-auriculatum; rostellum subulatum, in sinu clinandrii fere absconditum, brachiis rectis protrusis clinandrio parum longioribus, processibus stigmatiferis clavatis sub-æquilongis; ovarium cum pedicello gracili incurvo circa 2 cm. longum. (*Ex exempl. 2 exsicc. n. 392 ut infra.*)

Hab: South-eastern Region; TRANS-VAAL REPUBLIC: rocky places near Johannesburg, alt. about 1850 met., fl. March, *E. F. Galpin*, 392.

Plate 17. Fig. 1, flower; 2, side sepal; 3, odd sepal; 4, lip; 5, posterior,—6, anterior segment of one of the petals,—all the foregoing magnified about 3 diameters; 7, column, front view; 8, ditto, side view,—the latter variously magnified.

Erect or decumbent, 20 cm. or more in height. Stem leafy, leaves 6-8, scattered lanceolate acuminate erect-spreading, 5-6 cm. long, the upper gradually smaller and passing into bracts; raceme rather loosely many-fl., 11 cm. long, bracts linear-lanceolate pubescent, slightly longer than the pedicels; side sepals obovate obtuse, obliquely apiculate, 6 mill. long; odd sepal ovate concave nerved, externally scabrid, 5 mill. long; petals bipartite, the posterior segment linear acute erect, 5 mill. long, the anterior subulate acute spreading, 8 mill. long; lip 3-partite, segments linear spreading, the middle one 1 cm. long, the lateral

7 mill. long, spur pendulous filiform incurved gradually inflated downward, 1.8-2 cm. long; clinandrium short rounded obtuse apiculate, with an ear-like tubercle on either side near the base; rostellum subulate, closely set in the bend of the clinandrium, with straight protruding arms somewhat longer than the clinandrium and equalling the club-shaped stigmatiferous processes; ovary, with the slender incurved pedicel about 2 cm. long.

Described from two dried specimens as above. Flowers green. With the habit and general appearance of *H. tetrapetala*, *Reichenbach f.*, our plant is smaller in all parts. The lip is almost exactly the same as that of *H. arenaria*, *Lindley*. It is well characterised by the completely separated anterior and posterior segments of the petals.



H. Bolus del.

F. Huth, Lith. Edin^g

SCHIZOCHILUS ZEYHERI, SONDER.

TAB. 18.

Tribe OPHRYDEÆ.

Sub-tribe HABENARIEÆ.

Genus SCHIZOCHILUS.

SCHIZOCHILUS, *Sonder, in Linnæa, vol. xix, p. 78 (1847);* *Bentham & Hooker, Gen. Plant., vol. iii, p. 632 (1883).*—Sepala libera conniventia, demum parumper patentia, lateralia antico ecalcarato paullo majora. Labellum posticum basi cum columna connatum, erecto-patens, ungue lato concavo basi in calcar descendentem apice contractum productum, lamina integra vel 3-fida. Columna erecta oblonga. Anthera erecta, loculis approximatis parallelis, apicibus (inferis) rostellum arcte amplexantibus; pollinia in loculis solitaria grosse granulosa, glandulis nudis approximatis in margine superiori cavernæ stigmatis vix ostensis. Rostellum semi-orbiculare inter loculos antheræ complicatum. Stigma ad basin antheræ excavatum. Capsula parva ovoidea vel oblonga recta erecta.—Herbæ terrestres glabræ, infra medium foliatæ, tuberibus oblongis vel clavatis. Folia angusta. Flores parvi spicati quaquaversi. Bractæ angustæ, floribus breviores.

Genus adhuc non omnino rite definitum. Inter Habenarieas recte collocavit beatus auctor; enimvero Platantheræ *Gymnadeniæ*que arcte affine, etsi auctoribus recentioribus perperam inter Diseas locatum est. A *Reichenbachio* fil. cum *Brachycorythide* junctum est, quæ æquo jure, columnæ structura (*Schizochilo* persimili) *Habenarieis* referenda; at *Schizochilus*, labello postico calcarato, jam satis distinctus esse videtur.

Schizochilus Zeyheri, *Sonder, loc. cit.* Herba 15–45 cm. alta; caulis gracilis erectus subflexuosus foliosus; folia sæpius basin versus conferta ligulata acuta patentia, 5–8 cm. longa, in bracteas 2–4 remotas abeuntia; spica cylindrica, 5–10 cm. longa, multiflora, bractæ herbacæ ovatæ acuminatæ floribus breviores; sepala ovata concava acuta, circa 7 mill. longa; petala lanceolata acuta incurva, 4–5 mill. longa; labellum sepalis subæquilongum, papillis minimis nitidis exasperatum, circumscriptione obovata, alte trifidum, laciniis subæqualibus oblongis vel intermedio paullo latiore, calcar cylindricum vel subinflatum, dorso compresso, rectum, limbo subæquilongum; ovarium cylindricum rectum nec tortum calcar plus minus superans. (*Ex exempl. 2 viv. pluribusque exsiccatis*). *Brachycorythis Zeyheri, Reichenbach fil., in Flora, 1867, p. 117.*

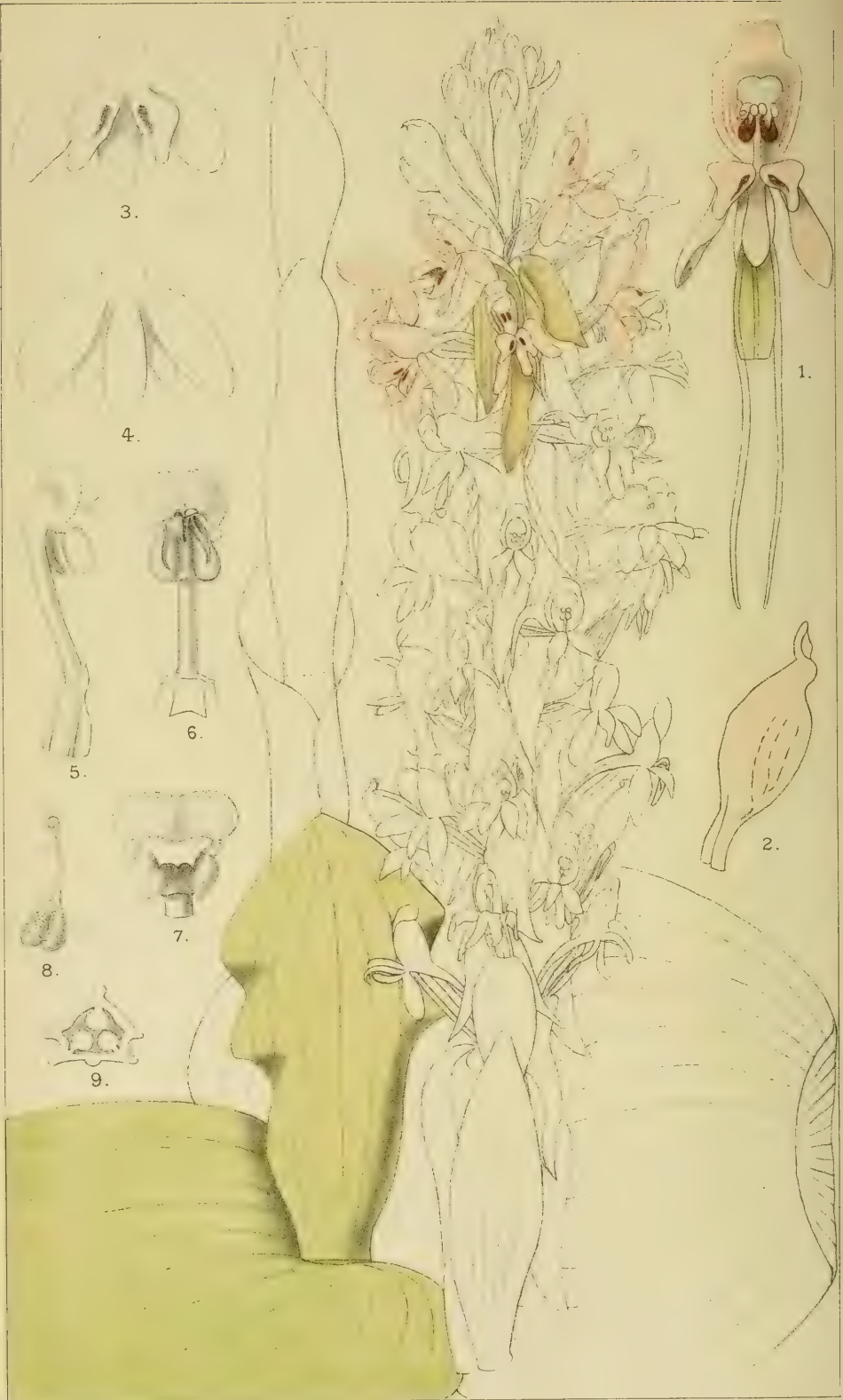
Hab: South-eastern Region; CAPE COLONY: Winterberg, in moist places, Dec., *Ecklon & Zeyher*; Elandsberg, near Stockenström,

alt. 1850 met., Febr., *Scully*, 405; Perie Forest, Nov.-Dec., *Sim*; Bazija, Kaffraria, alt. 1250 met., Febr., *Baur*, 630; near Kokstad, *Tyson*, 1600.—NATAL: *Sanderson*, 564; Inanda, alt. 750 met. March, *Wood*, 478; summit of Olivier's Hoek Pass, Jan., *Wood*, 3425.

Plate 18. Fig. 1, flower, side view; 2, ditto, front view; 3, odd sepal; 4, one of the side sepals; 5, flower, with the sepals removed; 6, one of the petals; 7, lip; 8, column with petals; 9, column; 10, one of the pollinia; 11, column with lip, from another plant; 12, rostellum, side view; 13, ditto, front view,—all variously magnified.

A herb 15–45 cm. high; stem slender erect leafy; leaves crowded towards the base, ligulate acute spreading, 5–8 cm. long, passing into remote bracts; spike cylindrical many-fl., 5–10 cm. long, bracts herbaceous ovate acuminate shorter than the flowers; sepals ovate concave acute, about 7 mill. long; petals lanceolate acute incurved, 4–5 mill. long; lip about as long as the sepals, rough with minute shining papillæ, obovate in outline, deeply 3-fid, the segments oblong sub-equal or the intermediate a little broader, spur cylindrical or somewhat inflated, compressed dorsally, straight, about as long as the limb; ovary cylindrical straight, not twisted, more or less exceeding in length the spur.

Described from two living specimens received from Mr. Sim, from the Perie Forest, and from numerous dried specimens. The colour of the flowers was bright yellow, the lip a deeper yellow, petals pale but not white. Sonder, however, describes the flowers as white, and Baur says “flowers beautiful white, lip golden yellow with small dark dots.” I have never seen a type specimen of Ecklon and Zeyher's, but the plants I have examined agree well with the description of Sonder, whom I have always found carefully accurate. I suppose this to be a very variable species. Tyson's and Scully's specimens most resemble the plant I have drawn. Wood's and Sanderson's are taller and slenderer in proportion, with narrower and more distant leaves, but there is hardly any difference in the flowers. *S. Bulbinella, mihi*, has a denser spike of smaller flowers with the lip less divided, and a proportionately much smaller spur. Of *S. Gerrardi, mihi*, (*Brachycorythis Gerrardi, Reichenbach fil.*) I have seen no authenticated specimens.



TAB. 19.

Tribe OPHRYDEÆ.

Sub-tribe DISEÆ.

Genus SATYRIUM.

Satyrium maculatum, *Burchell, in Lindley Gen. & Sp. Orch.* p. 337 (1838).—Herba erecta glabra, 25–45 cm. alta; caulis robustus rectus, vaginis 4–5 cucullatis laxis herbaceis vestitus; folia 2, radicalia humistrata suborbicularia carnosae, 6–9 cm. diametro; spica oblonga sæpius dense multiflora, vel interdum laxe pauciflora, floribus patentibus; bracteæ lanceolatae membranaceæ reflexæ; sepala lateraliter anguste elliptica patentiter deflexa, impar angustius, omnia 1–1.2 cm. longa; petala oblique lanceolata obtusa, sepalis paullo breviora; labelum galeatum ovatum, apice erecto obtusissimo, calcaribus filiformibus ovario $1\frac{1}{2}$ –2 plo longioribus; columna elongata subrecta; rostellum rhomboideum, antice anguste tridentatum; lobus stigmatiferus cordato-reniformis emarginatus, rostello subæquilongus at multo latior; ovarium oblongum gracile rectum. (*Ex exempll. plur. viv. exsiccatisque*).

Hab: South-eastern Region; CAPE COLONY: hill-sides in the districts of George, Knysna, Port Elizabeth, Grahamstown, &c., alt. up to about 650 meters, and mostly within thirty miles of the seacoast, fl. Oct.–Nov., *Burchell*, 6854; *MacOwan*, 388; *Bolus*, 2471 &c.

Plate 19. Fig. 1, flower; 2, part of the lip, the spurs cut off, side view; 3, sepals and petals, viewed from above and flattened out; 4, ditto, viewed from below,—all the foregoing magnified 2 diameters; 5, column, side view; 6, ditto, front view; 7, ditto, the upper part viewed from above; 8, one of the pollinia; 9, section of the ovary,—all the latter variously magnified.

A glabrous erect herb, 25–45 cm. high; stem robust straight, clothed with 4–5 loose cucullate herbaceous sheaths; leaves 2, radical, lying appressed to the ground, nearly round, fleshy, 6–9 cm. in diameter; spike oblong usually densely many-fl., sometimes loosely few-fl., flowers spreading; bracts lanceolate membranous reflexed; side sepals narrow-elliptical, spreading-deflexed, the odd sepal narrower, all 1–1.2 cm. long; petals obliquely lanceolate obtuse, a little shorter than the sepals; lip galeate ovate with a free erect very obtuse apex, spurs filiform $1\frac{1}{2}$ –2ce as long as the ovary, or longer; column long, nearly straight;

rostellum rhomboidal, narrowly three-toothed in front; stigmatiferous lobe cordate-reniform emarginate, about as long as the rostellum but much wider; ovary oblong slender straight.

Described from several living and dried specimens from different localities. Flowers creamy white, or pale rose, or lilac, always with purple spots or stripes on the petals, and on the inside of the lip, and sometimes on the middle sepal. The floral characters seem pretty constant, but the vegetative are variable: sometimes it is a stout-stemmed, many flowered, handsome plant, with large loose sheaths: sometimes slender, the sheaths greatly reduced, and the flowers much fewer.



SATYRIUM PYGMAEUM, SONDER.

TAB. 20.

Tribe OPHRYDEÆ.

Sub-tribe DISEÆ.

Genus SATYRIUM.

Satyrium pygmæum, *Sonder, in Linnæa*, vol. xix, p. 86 (1847).—Caulis gracilis erectus, 6–20 cm. altus; folia radicalia 2, humistrata ovata acuta, obscure nervata, 2·5–3·7 cm. longa, caulinea 2–4, conformia, sensim minora, erectiora; racemus laxè multiflorus; bracteæ ovatæ acuminatæ reflexæ, floribus paullo breviores; flores deflexæ, fere horizontales; sepala petalæque basi connata deflexa, 4 mill. longa; sepala lateralialia falcato-ovata subacuta, impar ovatum obtusum; petala oblique ovata, margine exteriori angulato; labellum galeatum ovatum subacutum, calcaribus filiformibus divaricatis ovario parum brevioribus, totum 1·2–1·4 cm. longum; columna abbreviata deflexa; rostellum subquadratum, margine anteriori in acumen subulatum productum; glandulæ dissitæ; lobus stigmatiferus oblongus, rostello æquilongus basi 2-tuberculatus. (*Ex exempl. plur. viv.*)

Hab: South-western Region; CAPE COLONY: Winterhoekberg, near Tulbagh, alt. 600–900 met., fl. Nov., *Ecklon & Zeyher*; Grootvadersbosch, Swellendam, Oct., *Zeyher*, 3914; Skurfdebergen, near Ceres, alt. 600 met., fl. Oct., *Bolus*, 7327; *Herb. Norm. Aust-Afr.*, 1095.

Plate 20. Fig. 1, flower; 2, lip; 3, sepals and petals, flattened out and viewed from above,—all the foregoing magnified about 3 diameters; 4, column, side view; 5, column, front view; 6, one of the pollinia,—the latter variously magnified.

Stem slender erect, 6–20 cm. high; radical leaves 2, appressed to the soil, ovate acute, obscurely nerved, 2·5–3·7 cm. long, cauline leaves 2–4, similar but gradually smaller and more erect; raceme loosely many-fl., bracts ovate acuminate reflexed, slightly shorter than the flowers, flowers almost horizontally deflexed; sepals and petals connate at base, deflexed, 4 mill. long, side sepals falcate-ovate subacute, odd sepal ovate obtuse; petals obliquely ovate, outer margin angled; lip galeate, ovate in outline, subacute, mouth suborbicular, spurs filiform divaricate, a little shorter than the ovary, the whole 1·2–1·4 cm. long; column short deflexed; rostellum somewhat square, the margin in front produced into a deflexed point, glands distant; stigma-tiferous lobe oblong, equalling the rostellum, 2-tuberled at base.

Described from numerous living specimens. Colour of the sepals and petals greenish yellow with red tips, galea and spurs red on the back with greenish yellow margins, stem red. With a column resembling that of the saccate species this plant in other respects belongs to the spurred group. It may generally be easily recognised by the very horizontal position assumed by its flowers.



H. Bolus del.

F. Huth, Lith. Edin.

SATYRIUM GUTHRIEI, BOLUS.

TAB. 21.

Tribe OPHRYDEÆ.

Sub-tribe DISEÆ.

Genus SATYRIUM.

Satyrium Guthriei, *n. sp.*.—Caulis spithamæus vel ultra, erectus, vaginis 2 cucullatis inflatis vestitus; folia 2, radicalia, inferum humistratum ovatum 7·5 cm. longum, superum hand visum; spica pluriflora (in exemplari unico læsa) bracteis lanceolatis, inferioribus patentibus, superioribus adscendentibus, flores plerisque excedentibus; sepala oblonga subacuta, 7 mill. longa, lateralia obliqua vel subfalcata, intermedium rectum; petala ligulata acuta, marginibus sub lente erosulis, sepalis fere æquilonga sed angustiora; labellum galeatum globoso-inflatum, ore subrotundo, dorso argute carinatum, apice libero acuminato reflexo, calcaribus filiformibus pendulis ovario subæquilongis; columnæ stipes rostello fere duplo longior; rostellum triangulare vel late linguæforme arcuato-porrectum, antice emarginatum, glandulis in utroque latere approximatis; anthera ultra rostellum protrusa, connectivo producto acuminato sub rostello deflexo; lobus stigmatiferus bipartitus, segmentis subulatis erectis apice paullo divaricatis, rostello multo brevioribus; ovarium prominenter costatum. (*Ex exempl. unico vivo.*)

Hab: South-western Region; CAPE COLONY: in burnt-off places on the Cape Flats, Tokai, near Cape Town, (growing with *S. candidum*, *Lindley*) alt. about 30 meters, fl. Oct., coll. *F. Guthrie, jun.* in 1890, (No. 7095 in my herb.)

Plate 21. Fig. 1, flower side view, with bract; 2, ditto, front view; 3, sepals and petals, flattened out, upper side; 4, lip,—all the foregoing magnified about 3 diameters; 5, 6, 7, 8, column; 9, one of the pollinia,—all the latter variously magnified.

Stem a span or more high, erect, with about two inflated sheaths; leaves 2, radical, the lower ovate, lying close to the ground, about 7·5 cm. long, (the upper damaged in the only specimen seen); spike somewhat loosely several-flowered, bracts lanceolate, the lower spreading, the upper ascending, mostly exceeding the flowers; sepals oblong subacute, about 7 mill. long, the side ones oblique or subfalcate, the middle one straight; petals strap-shaped acute, the margins minutely and

irregularly notched, narrower than the sepals and almost equally long; lip galeate globose-inflated, mouth roundish, dorsal ridge sharply keeled, free apex acuminate reflexed, spurs filiform pendulous about as long as the ovary; stalk or foot of the column twice as long as the rostellum; rostellum triangular or broadly tongue-shaped, arched and projecting forward, emarginate in front, the glands situate very near each other on either side the notch; anther pushed up horizontally and projecting beyond the rostellum, apex of the connective free acuminate bent forward under the rostellum; stigmatiferous lobe bipartite, the segments subulate erect, somewhat divaricate towards the apex, much shorter than the rostellum; ovary prominently ribbed.

Described from a single living specimen, collected as above. Colour of stem and bracts brownish and pale red, flowers from pale pink to white, spurs and nerves of the galea red. This is so remarkable and distinct a species that I have not hesitated to describe it from a single, and injured, specimen. The injury, however, was in the middle of the spike, and, it is clear, had nothing whatever to do with the peculiar structure of the column. This organ resembles in some degree that of *S. bicallosum*, *Thunberg*, (*Bolus, Orchids of the Cape Peninsula*, t. 31) while both are, in this respect, very different from that of any other *Satyrium* known. In every other character this differs greatly from *S. bicallosum*, and I doubt very much if it is a natural hybrid. The specimen found had the upper portion of the spike injured, and its development no doubt arrested; in its normal condition it would probably be much longer than is shown in the figure.



H. Bolus del.

F. Huth, Lith. Edin.

SATYRIUM MUTICUM, LINDLEY.

TAB. 22.

Tribe OPHRYDEÆ.

Sub-tribe DISEÆ.

Genus SATYRIUM.

Satyrrium muticum, *Lindley, Gen. & Sp. Orch. p. 344 (1838).*—Caulis validus erectus strictus, 25–38 cm. altus, vaginis circa 5 herbaceis laxis, basi alte connatis, superioribus apicibus patentibus, vestitus; folia 2 radicalia humistrata cordato-orbicularia vel ovata, coriacea vel subcarnosa, venosa, 7–9 cm. longa; spica abbreviata, laxa vel dense 8–12-fl., bractea oblonga acuta concava reflexa, floribus longiores; sepala lateraliter oblonga, impar angustius, omnia integra obtusissima recurva, cum basi alte connata 1.4–1.6 cm. longa; petala oblongo-spathulata obtusa, basi lacerata, crispa, apicem versus integra, marginibus incurvis, sepalis paullo longiora; labellum galeatum, limbo fere hemisphærito, apice libero majusculo obtuso crispo, basi saccis conicis circa 2 mill. longis auctum; rostellum rhomboidum, antice argute tridentatum, sinibus caudiculiferis duobus, glandulo unico subquadrato in rostellum incumbente; lobus stigmatiferus semi-orbicularis subconcavus pulvinatus; ovarium 6-costatum, quorum 5 arguta fere alata. (*Ex exempl. plur. viv. exsiccatisque.*)

Hab: South-western Region; CAPE COLONY: Driefontein near Mossel Bay, *Drege*, 4758*b*; in sandy soil near the village of Knysna, fl. Aug.–Sept., No. 6227 in herb. Bolus.

Plate 22. Fig. 1, flower with bract, side view; 2, another flower, front view; 3, lip, back view; 4, sepals and petals, under side; 5, ditto, upper side,—all the foregoing magnified twice; 6, 7, column; 8, 9, pollinarium; 10, section of the ovary,—all the latter variously magnified.

Stem stout erect straight, 25–38 cm. high, closely covered with about 5 loose herbaceous sheaths deeply connate at base, the upper ones spreading at the apex; leaves 2, radical, cordate-orbicular or ovate, leathery or somewhat fleshy, veined flat and appressed to the ground, 7–9 cm. long; spike somewhat short, loosely or densely 8–12-fl., bracts oblong acute concave reflexed, longer than the flowers; side sepals oblong, the odd sepal narrower, all entire very obtuse and recurved, including the deeply connate portion at base 1.4–1.6 cm. long; petals oblong-spathulate obtuse, crisped and lacerate except near the apex,

margins incurved, a little longer than the sepals; lip galeate, the limb nearly hemispherical, free apex large obtuse crisped, produced at base into two conical sacs of about 2 mill. long; rostellum rhomboidal, sharply tridentate with two recesses on the front edge for the reception of the caudicles, gland only one, nearly square, lying upon the rostellum; stigmatiferous lobe semi-orbicular somewhat concave, cushioned; ovary 6-ribbed, of which 5 are sharply ridged or almost winged.

Described from several living and dried specimens. The flowers are rosy with darker carmine tints on the tips of the sepals and petals. In habit and colour of the flowers this resembles *S. erectum*, Swartz; in the shape and setting of the flowers *S. membranaceum*, Swartz; but its peculiar short conical sacs, its single gland, and its almost winged ovary at once distinguish it from these and from any other species. Lindley, adhering literally to an artificial distinction, placed the species in his group *Saccatæ*. But with none of the members of that group has it any other alliance than in its abbreviated spurs, while in other respects it differs widely from them, and I think will be more naturally placed, as an exceptional species, in the spurred group.



H. Bolus del.

F. Huth, Lith. Edin.

SATYRIUM OCELLATUM, Bolus.

TAB. 23.

Tribe OPHRYDEÆ.

Sub-tribe DISEÆ.

Genus SATYRIUM.

Satyrium ocellatum, n. sp.—Caulis erectus validus foliosus, $\frac{1}{2}$ –1 metralis; folia plura lanceolata acuta, basi laxè vaginantia, nervata erecto-patentia, inferiora sæpius abbreviata, superiora longiora, 10–15 cm. longa, sensim in vaginas abeuntia; spica oblonga vel ovata subdensa multiflora, bracteæ lanceolatæ, demum reflexæ, floribus patentibus paullo longiores; sepala petalæque basi connata erecta deinde patentia, omnia 1·2 cm. longa, vel sepala lateralialia paullo breviora, sepala oblonga subobtusata, lateralialia apice callosa, petala linearialia obtusata; labellum galeatum, limbo inflato subsphærico, marginibus inflexis, apice quasi excavato, apicula libera, dorso argute carinato, circa 1 cm. longo, calcaribus filiformibus ovario multo longioribus, 2·5 cm. longis; rostellum subtriangulare, antice obtuse rostratum, rostro inferne incrassato; glandulæ majusculæ ovaless albæ, oculorum instar, in utroque margine rostellii insidentes; lobus stigmatiferus suborbicularis marginatus, minute crenulatus, emarginatus, rostellum æquilongus; stigma pulvinatum. (*Ex exempl. 2 vivis pluribusque exsiccatis*).

Hab: South-eastern Region; CAPE COLONY; near Komgha, marshy places, alt. 560 met., fl. Dec., *Flanagan*, 527; Mt. Currie, near Kokstad, alt. 1540 met., fl. Jan.–Feb., *Tyson*, 1091.—NATAL: Sterkspruit, Weenen, fl. Dec., *Wood*, 3415.—TRANS-VAAAL REPUBLIC: streams near Pretoria, alt. 1300 met., fl. Aug., *McLea* (3095 in herb. Bolus); near Johannesburg, March, *J. Hall* (6220 in herb. Bolus).—*Burchell's* 4372, 4379, 4387, all from near Port Elizabeth, Dec., 1813, are apparently the same species.

Plate 23. The whole plant to the left, reduced in size; the spike to the right, of the natural size. Fig. 1, flower, side view; 2, ditto, front view; 3, sepals and petals, flattened out,—all the foregoing magnified 2 diameters; 4, column, side view; 5, ditto, front view; 6, one of the pollinia,—all the latter variously magnified.

Stem erect robust leafy, $\frac{1}{2}$ –1 meter high; leaves several lanceolate acute, loosely sheathing at base, prominently nerved, ascending, the two lower generally short, the succeeding two or three 10–20 cm. long, the upper shorter passing gradually into sheathing bracts; spike somewhat densely many-fl., oblong or

ovate, bracts broadly lanceolate, at length reflexed, a little longer than the spreading flowers; sepals and petals connate at base and erect, then spreading, all about 1·2 cm. long, or the side sepals a little shorter, sepals oblong subobtusate, the lateral with an apical callus, petals linear-lanceolate subobtusate; lip galeate, limb inflated with inflexed margins, cut back at the summit with a short free apical point, dorsally sharply ridged, about 1 cm. long; spurs tapering filiform, much exceeding the ovary, about 2·5 cm. long; rostellum somewhat triangular, obtusely beaked, the beak thickened below, glands rather large oval white eye-like situate about half-way along either margin, tuberculate at base; stigmatiferous lobe suborbicular, margined, minutely crenulate, emarginate, about as long as the rostellum; stigma cushioned.

Described from several living and dried specimens. Flowers pink (in those I saw) or "fine purple" (McLea) or "crimson" (Tyson). In its dried state the species resembles *S. macrophyllum*, Lindley, especially in the structure of the perianth. It differs, however, very considerably in the column, and some minor characters. The plant figured was drawn from a specimen raised near Cape Town from Trans-Vaal tubers.



TAB. 24.

Tribe OPHRYDEÆ.

Sub-tribe DISEÆ.

Genus SATYRIUM.

Satyrium debile, *Bolus, in Journ. of Linn. Soc. vol. xxii, (Bot.)* p. 67 (1885).—Herba glabra debilis decumbens, 15–20 cm. alta; caulis gracilis, laxe foliosus, basi vaginis 2–3 membranaceis vestitus; folia 4–5 lanceolata adscendentia acuta subundulata, infimum 5–6 cm. longum, superiora sensim minora; spica sublaxa angusta, 3–5·5 cm. longa, bracteæ lanceolatæ patenti-erectæ, inferiores floribus longiores, superiores breviores; flores cum ovario 5–7 mill. longi; sepala lateralia elliptica, impar oblongum, petal subrhomboidea, omnia obtusa basi connata patentia, vix 2 mill. longa; labellum galeatum obtusum, 2–2·5 mill. longum, basi saccis minimis obtusissimis auctum; columna abbreviata, fere sessilis; rostellum brevissimum triangulare; antheræ loculi dissiti; lobus stigmatiferus emarginatus, basi 2-tuberculatus; stigma semi-orbiculare pulvinatum; ovarium oblongum, margine utrinque bicostatum. (*Ex exempll. plur. viv.*)

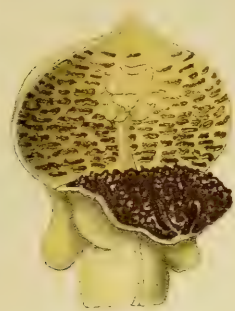
Hab: South-western Region; CAPE COLONY: Kleinpoort on the Winterhoek Mt. near Tulbagh, alt. about 900 meters, fl. Dec., coll. *A. Bodkin* (No. 5907 of my herb.)

Plate 24. Fig. 1, flower with bract, front view; 2, ditto, viewed from behind,—both magnified about 6 diameters; 3, flower, the column being removed; 4, column, front view; 5, ditto, side view; 6, section of the ovary,—all the latter variously magnified.

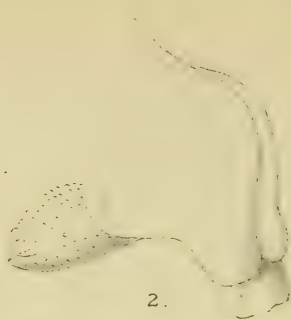
A glabrous weak decumbent herb, 15–20 cm. high; stem slender, loosely leafy, with 2–3 membranous sheaths below the lowest leaf; leaves 4–5 ascending lanceolate acute, somewhat waved, the lowest 5–6 cm. long, the upper gradually smaller; spike somewhat loosely flowered narrow, 3–5·5 cm. long, bracts lanceolate spreading-erect, the lower exceeding, the upper shorter than the flowers; flowers, including the ovary, 5–7 mill. long; side sepals elliptical, odd sepal oblong, petals somewhat rhomboidal, all obtuse connate at base spreading, scarcely 2 mill. long; lip galeate obtuse (the apex neither turned down nor depressed), the mouth wider than its length, 2–2·5 mill. long, with 2 very small and very obtuse sacs at the base; column short, nearly sessile; rostellum very short, triangular; cells of

the anther separated; stigmatiferous lobe emarginate, 2-tubercled at base; stigma semi-orbicular cushion-like; ovary broadly oblong, ribbed on either margin.

Described from numerous living specimens, the flowers of which were, however, somewhat withered. Colour of the flowers dull green with reddish tinges. The species is distinct and well-characterised by its slender weak habit, thin spike, very short sacs of the lip and nearly sessile column. Its nearest allies appear to be *S. pygmæum*, *Sonder* (Plate 20, *ante*) and *S. Lindleyanum*, *mihi* (*Orchids of the Cape Peninsula*, t. 30).



1.



2.



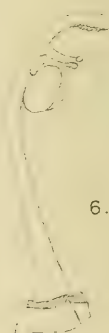
3.



4



5.



6.

TAB. 25.

Tribe OPHRYDEÆ.

Sub-tribe DISEÆ.

Genus SATYRIUM.

Satyrium pumilum, *Thunberg, Prodr. Plant. Cap.* p. 6 (1794); *ib.*, *Flor. Cap. ed.* 1. (1807) p. 98; *ed.* 1823, p. 19.—Herba glabra humilis, 3–5 cm. alta; folia 4–6, ovata lanceolatave acuta laxa adscendentia, 3–4.5 cm. longa; scapus abbreviatus, 2–5-fl., bracteis foliaceis floribus subæquilongis; sepala petalaeque pro maxima parte longitudinis in laminam oblongam subtruncatam emarginatam carnosam supra verrucosam 8 mill. longam coalita, sepalorum lateralium parte libera brevissima falcato-incurva, intermedii anguste lineari, petalorum lineari-falcata 1–2 mill. longa; labellum galeatum ovatum acutum, intus transverse striatum, basi saccis duobus scrotiformibus auctum; columna elongata gracilis subrecta, apice deflexa; rostellum subulatum; glandulæ dissitæ; lobus stigmatiferus oblongus vel ellipticus, rostello longior; ovarium abbreviatum. (*Ex exempl. plur. viv.*) *Aviceps pumila*, *Lindley, Gen. & Sp. Orch.* p. 346 (1838).

Hab: South-western Region; CAPE COLONY: Piquetberg Mt., near streams, Oct., *Thunberg*; Hex River, *Tyson*; near Ceres, abundant in moist ground on the plain about a mile north from the village, alt. 460 meters, beginning of Oct. (1889) *Bolus*, 7347.

Plate 25. Figs. 1, 2, flowers; 3, ditto, the lip being removed,—all magnified 3 diameters; 4, sepals and petals, the upper side, flattened out; 5, 6, column,—all the latter variously magnified.

A glabrous dwarf herb, 3–5 cm. high; leaves 4–6, ovate or lanceolate acute lax ascending, 3–4.5 cm. long; scape short, 2–5-fl., bracts leaflike about as long as the flowers; sepals and petals for the greater part of their length confluent into an oblong subtruncate emarginate fleshy mass, the apices of the sepals only slightly free, the petals linear-falcate free for about 1–2 mill. in length; lip galeate ovate acute transversely striate within, furnished at base with two scrotiform sacs; column long and slender, bent down at the apex; rostellum subulate; glands distant; stigmatiferous lobe oblong or elliptical, longer than the rostellum; ovary very short.

Described from numerous living specimens gathered at Ceres,

as above. Colour of the galea dull yellow, striped with brown within in the manner of many *Stapelieæ*; of the sepals and petals deep umber. The flowers have a heavy odour of putrid flesh, also exactly resembling that of many *Stapelieæ*. This circumstance, taken in conjunction with the marking of the lip, is of much interest; though the occurrence of such a smell is not unknown in Orchids (notably shown in *Bulbophyllum Beccarii*, *Reichenbach f.*, vide *Bot. Mag.*, t. 6567) yet it is somewhat uncommon. There were no *Stapelieæ* to be seen in the immediate vicinity, and indeed I do not remember to have noticed any near Ceres. The species is also structurally an interesting one. In no other is the consolidation of the sepals and petals carried nearly so far. Lindley, who missed seeing the petals in the dried specimens, where they would easily escape detection, made a new genus (*Aviceps*) of the plant. But Thunberg's full description first made in 1807 was perfectly accurate as I pointed out in 1882 (*Journ. of Linn. Soc. (Botany)* vol. xix, p. 237), and even before this Bentham had considered that the plant could not be separated from *Satyrium* (*ib.*, vol. xviii, p. 357).



TAB. 26.

Tribe OPHRYDEÆ.

Sub-tribe DISEÆ.

Genus PACHITES.

PACHITES, *Lindley, Gen. & Sp. Orch.* p. 301 (1835) (Char. emend.)—Sepala subæqualia libera patentia. Petala sepalis similia nisi paullo minora. Labellum posticum erectum indivisum vel lobatum ecalcaratum. Columna erecta inferne cylindrica; clinandrium anticum apicem versus columnæ; antheræ loculi penduli dissiti vel basi tantum approximati; pollinia in quoque loculo granulosa in caudiculos adscendentes, glandulis terminalibus vel antice deflexis, inter se distantibus; rostellum carnosum pyramidale vel hippocrepiforme, appendicibus 2 corniformibus auctum; stigma inter loculos antheræ pendulum; capsula recta, nullo modo torta, erecta cylindrica erostris.—Species 2, herbæ Capenses terrestres foliosæ, habitu *Disa* specierum nonnullarum, sed florum structura *Satyrio* magis affinis. Folia linearia erecta. Spica elongata floribunda, vel abbreviata pauciflora, floribus parvis. Bractee lanceolatæ, floribus subæquilongæ.

Pachites Bodkini, *n. sp.*—Herba glabra pusilla, vix spithamæa; caulis erectus paucifoliosus; folia radicalia 0, caulina circa 5, e basi lata membranacea vaginante linearia acuminata erecta, infimum 3 cm. longum, superiora sensim minora; racemus abbreviatus, laxe 5-fl., bractee foliacee lanceolatæ, ovariis æquilongæ; sepala lanceolata acuminata 1-nerva, erecto-patentia, 1·3 cm. longa; petala acuta, marginibus leviter incurvis, subtus prominenter 1-nerva, 1 cm. longa; labellum petalis æquilongum, erectum trilobum basi oblongum, segmentis lateralibus oblongis obtusis abbreviatis incurvis, lobo intermedio lanceolato multo longiori apice subrecurvo, basi extus carunculis pluribus minimis aggregatis præditum; antheræ loculi incurvi, basi tantum approximati; pollinium glandulæ terminales, in summa appendice rostellii insidentes; rostellum hippocrepiforme, appendicibus erectis terminalibus; stigma hippocrepiforme pulvinatum; ovarium cylindricum. (*Ex exemplari unico vivo.*)

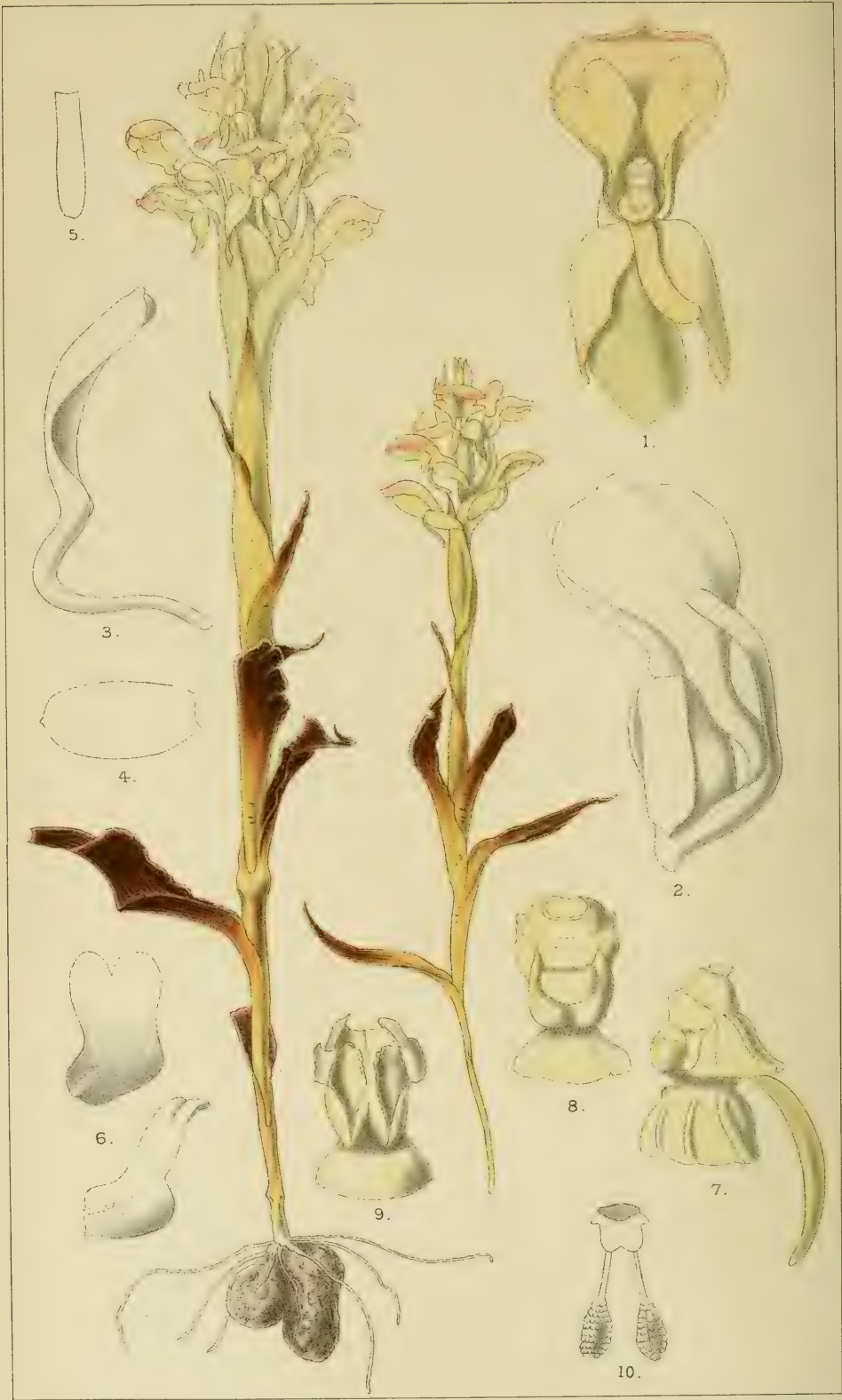
Hab: South-western Region; CAPE COLONY: rare, in a moist place on the Muizenberg, Cape Peninsula, alt. about 400 meters, collected in the beginning of January, 1890, by Prof. Bodkin (No. 7071 in my herb.).

Plate 26. Fig. 1, flower; 2, odd sepal; 3, one of the petals; 4, lip,—all the foregoing magnified 3 diameters; 5, column, posterior

view; 6, ditto, anterior view; 7, ditto, the upper part, side view,—all the latter magnified about 6 diameters; 7, one of the pollinia, magnified.

A slender glabrous herb, scarcely a span high; stem erect few-leaved; radical leaves none, cauline about 5, linear acuminate, with a broad membranous sheathing base, erect, the lowest about 3 cm. long, the upper gradually smaller; raceme short, loosely 5-fl., bracts leaf-like lanceolate, as long as the ovaries; sepals lanceolate acuminate 1-nerved erect-spreading, 1-3 cm. long; petals acute, margins slightly incurved, prominently 1-nerved beneath, 1 cm. long; lip as long as the petals, erect, 3-lobed, side segments short oblong obtuse, the intermediate lobe lanceolate much longer, furnished at base on the under surface with a cluster of minute yellow tubercles; cells of the anther curved, approximate at base only, glands of the pollinia capping the arms of the rostellum; rostellum horse-shoe-shaped, with erect arms (appendages); stigma horse-shoe-shaped, cushion-like; ovary cylindrical.

Described from a single living plant. Colour of the flower pale purple, suffused with darker purple on the side-lobes of the lip; anther dark-brown; stem, bracts and leaves yellowish. The discovery of this plant, and the subsequent re-discovery of the very rare *P. appressa*, Lindley (due to the enthusiastic and successful botanist and collector, Mr. R. Schlechter of Berlin) have thrown light upon the generic characters of this interesting genus, which has hitherto been very imperfectly understood. The genus was established by Lindley in 1835 upon a single almost deflorate specimen collected by Burchell in 1815. Benthams (*Gen. Plant.* iii, pp. 629, 630) admitted the difficulty of understanding its structure from the material available; but, having had the advantage of seeing and drawing living specimens of both species, I think they should be regarded as congeneric in spite of some curious differences in the column (which exhibits a singular affinity with that of *Satyrium rhynchanthum*, *mihi*, *Orchids of the Cape Peninsula*, t. 25,—a plant in other respects very different). By a remarkable coincidence while Burchell found, as he carefully noted in his MSS. catalogue, only one plant of *P. appressa*, Prof. Bodkin could find only one solitary specimen of this species, and further search in the same and in succeeding seasons has hitherto proved unavailing. Dr. Krauss, however, found *P. appressa* once again 24 years after Burchell; and since then for upwards of fifty years, so far as is known, it was not gathered, though others (and I myself) have searched for it in the original locality. Mr. Schlechter, however, has very recently found two specimens on the Langebergen near Zuurbraak in the Swellendam district; and I hope to publish a drawing of the plant in the next part of this work.



H. Bolus del.

F. Huth, Lith. Edin.

DISA SABULOSA, Bolus.

TAB. 27.

Tribe OPHRYDEÆ.

Sub-tribe DISEÆ.

Genus DISA.

Disa sabulosa, n. sp. (§ Monadenia).—Herba glabra erecta, 8-20 cm. alta; caulis rectus foliosus; folia 4-5, infimum lineari-oblongum acutum, superiora linearia acuminata erecto-patentia, cito marcescentia, 2-5 cm. longa, sensim in bracteas foliaceas abeuntia; spica ovata vel cylindrica, 3-7 cm. longa pluri- vel multiflora, bracteæ erectæ incurvæ floribus subæquilongæ; flores specie subnutantes, cum ovariis circa 2 cm. longi; sepala lateralia oblonga obtusa deflexa; sepalum impar galeatum obovatum retusum deflexum, calcare filiformi inflexo limbum vel ovarium paullo superante; petala subcarnosa, pro ratione galeæ magna, sepalis subæquilonga, oblique oblonga biloba, lobis æqualibus obtusissimis; labellum lineare obtusum, petalis sepalisque brevius; rostellum erectum, plicis lateralibus in se extus reversis. (*Ex exempl. plur. viv.*)

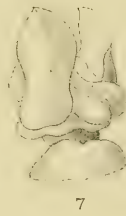
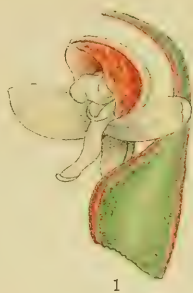
Hab: South-western Region; CAPE COLONY: Kenilworth, Cape Peninsula, in sandy flats and open heathy places recently "burnt-off," alt. 20 meters, fl. Oct.-Nov., *A. Bolus* (No. 7104 in my herb.; Herb. Norm. Aust.-Afr. 1874).

Plate 27. Fig. 1, flower, with bract; 2, ditto, posterior view; 3, odd sepal; 4, one of the side sepals; 6, petals,—all the foregoing magnified 3 diameters; 7, column, with lip; 8, column, front view; 9, ditto, posterior view; 10, pollinarium,—all the latter variously magnified.

An erect glabrous herb, 8-20 cm. high; stem straight leafy; leaves 4-5, mostly withered at the flowering period, the lowest linear-oblong acute, the succeeding linear acuminate erect-spreading, 2-5 cm. long, passing into erect leaf-like bracts; spike ovate or cylindrical, 3-7 cm. long, several- or many-flowered; bracts erect incurved, about as long as the flowers; flowers somewhat nodding, together with the ovary about 2 cm. long; side sepals oblong obtuse deflexed; odd sepal galeate obovate retuse, bent downward, spur filiform curved, a little longer than the limb, or than the ovary; petals subfleshy, large in proportion to the galea, about as long as the side sepals, obliquely oblong

bilobed, the lobes equal rounded and very obtuse; lip linear obtuse shorter than the sepals or petals; rostellum erect, with a fold on either side turned back externally upon itself.

Described from numerous living specimens. Colour of the sepals dingy pale yellow, usually with reddish tints at the tips of the side sepals and over the whole back of the galea, but sometimes entirely free from red; petals and lip bright yellow. I am indebted for the detection of this species to my relative, Mr. Alfred Bolus. It is somewhat intermediate in character between *D. rufescens*, Swartz, and *D. pygmæa, mihi*, but quite distinct from either. From the first it differs by its wider galea, narrower lip, deeply lobed petals, and different column and pollinarium; from the latter by its long filiform spur, differently shaped petals, and larger size. At its flowering period the leaves are generally withered. The flowers appear to vary in size more than is usual. It was tolerably abundant where found, though, so far as hitherto known, confined to an area of two or three acres.



TAB. 28.

Tribe OPHRYDEÆ.

Sub-tribe DISEÆ.

Genus DISA.

Disa conferta, *n. sp.* (§ Monadenia).—Herba glabra gracilis spithamæa; caulis erectus rectus foliosus; folia linearia vel lanceolato-linearia acuminata erecto-patentia; spica cylindrica, dense multiflora, bracteis lanceolatis acuminatis flores confertos superantibus; flores inter minimos, circa 3 mill. longi; sepala lateralia late oblongo-ovata subobtusum; sepalum impar fornicatum ovatum concavum obtusum, basi muticum vel parum gibbosum; petala oblique oblonga acuta subexserta, sepalo impari fere æquilonga; labellum lineari-oblongum acutum undulatum, cæteris æquilongum; rostellum erectum, plicis anticis rotundatis crenulatis majusculis exsertis, posticis minoribus; glandula parvula; stigma pulvinatum, antice rotundatum. (*Ex exempll. 2 vivis.*)

Hab: South-western Region; CAPE COLONY: near Houw Hoek, fl. Sept., *Prof. Bodkin* (No. 6231 in my herb.); in sandy downs of the Cape Peninsula near Raapenburg, alt. 16 met., fl. Oct., *F. Guthrie* (No. 7097 in my herb. and at Kew).

Plate 28. Fig. 1, flower, with bract, magnified 4 diameters; 2, flower; 3, one of the side sepals; 4, 5, odd sepal; 6, lip, flattened out,—all the foregoing magnified about 6 diameters; 7, 8, column, with petals, side and front view; 9, 10, column; 11, pollinarium,—all the latter variously magnified.

A slender glabrous herb, a span high or less; stem erect leafy; leaves linear or lance-linear acuminate erect-spreading; spike cylindrical, densely many-fl., bracts lanceolate acuminate, longer than the very small (3 mill. long) crowded flowers; side sepals broadly oblong-ovate subobtusum; odd sepal arched ovate concave obtuse, muticous or very slightly gibbous at the base; petals obliquely oblong acute half-exserted, nearly as long as the odd sepal; lip linear-oblong acute undulate, as long as the sepals; rostellum erect, its lateral folds somewhat large rounded crenulate and exserted beyond the petals in front, the back folds smaller; gland rather small; stigma cushion-like, rounded in front.

Described from two living specimens from different localities. Colour of the sepals, lip and column pale dingy yellow; of the petals blood red. A very distinct species with the aspect of *D. micrantha*, but with a more compact spike, rather smaller flowers, a nearly muticous odd sepal, and a quite different column. The absence of a spur is unique in this group.



DISA OVALIFOLIA, SOND.

TAB. 29.

Tribe OPHRYDEÆ.

Sub-tribe DISEÆ.

Genus DISA.

Disa ovalifolia, *Sonder, in Linnaea, vol. xix, p. 93 (1847)*—(§ Eudisa).—Herba erecta glabra, 10–25 cm. alta; caulis rectus paucifolius; folia ovata acuta, 2 infima humistrata, 3·5–5 cm. longa, superiora 5–6 erecto-patentia sensim minora, caulem laxè amplexentia in bracteis abeuntia; spica cylindrica, 6–12-flora; bracteæ foliaceæ, inferiores floribus longiores, superiores breviores; sepala lateraliter oblique ovato-oblonga acuta adscendentia incurva, circa 1 cm. longa; sepalum impar posticum infundibulare, ore ovato, calcarè filiformi adscendente sensim contracto, totum 1·2–1·6 cm. longum; petala oblonga, apice parum falcata, secus marginem galeæ imposita nec adhærentia, subexserta; labellum lineare obtusum decurvum, apicem versus ampliatum crassum carnosum, basin versus transverse corrugatum, circa 8 mill. longum; rostellum adscendens, brachiis divaricatis; anthera horizontalis; ovarium cylindricum, transverse corrugatum. (*Ex exempl. plur. viv.*)

Hab: South-western Region; CAPE COLONY; near Brakfontein, Clanwilliam, *Ecklon & Zeyher*: on a low sandy hill on Hugo's farm, near Gydouw on the Cold Bokkeveld, about 12 miles from Ceres, alt. about 1000 meters, fl. middle to end of Sept., *Bolus*, 7326.

Plate 29. Fig. 1, flower, front view; 2, flower, the sepals being removed; 3, odd sepal; 4, petal, viewed from within,—all the foregoing magnified 3 diameters; 5, column, magnified.

Erect glabrous, 10–25 cm. high; stem straight sparingly leafy; leaves ovate acute, the two lower spreading on the ground, 4–5 cm. long, the succeeding 5 or 6 smaller, more erect, loosely sheathing the entire stem and passing gradually into bracts; spike cylindrical, 6–12-fl., bracts leaf-like, the lower exceeding, the upper shorter than the flowers; side sepals obliquely ovate-oblong acute, somewhat ascending and incurved, about 1 cm. long; odd sepal posticous, inverted-funnel-shaped, mouth ovate, spur straight gradually tapering to the apex, at length filiform and pointing upwards along the rachis, the whole 1·2–1·6 cm. long; petals oblong, slightly falcate at the apex,

disposed along the margin of the galea but not adherent to it, half-exserted and meeting at the summit; lip linear obtuse decurved, widened above the middle, thick and fleshy, transversely wrinkled near the base, about 8 mill. long; rostellum ascending, the arms divaricate; anther horizontal; ovary cylindrical, transversely wrinkled.

Described from several living specimens. Colour of the sepals dingy white with pale greenish-yellow patches, tipped with pink; petals and lip pale greenish-yellow; rostellum white; anther yellow; leaves and bracts green with rusty red tips, the two lower leaves maroon on the under surface. A very distinct species, apparently allied to *D. extinctoria*, *Reichenbach fil.*, resembling it in the shape and setting of the galea, but much more robust, leaves and flowers larger, and different in appearance. Sonder placed it in the section *Coryphæa*, but in that view I cannot concur. I have only seen it once, *viz.*, on the station last above mentioned, on Oct. 2, 1889, where there were about 50 plants, but most of them past the flowering period.



H. Bolus del.

F. Huth, Lithr. Edinb.

DISA TRIPETALOIDES, N. E. BROWN, VAR. *AURATA*.

TAB. 30.

Tribe OPHRYDEÆ.

Sub-tribe DISEÆ.

Genus DISA.

Disa tripetaloides, *N. E. Brown, in Gard. Chron., ser. iii, vol. v, p. 360 (1889) var. aurata.* (§ Eu-disa).—Herba erecta vel decumbens, glabra; caulis subflexuosus, inferne foliosus, sursum vaginis herbaceis lanceolatis acutis vestitus; folia 4–8, basin versus conferta lanceolata vel ligulata, acuta laxa erecto-patentia, 6–10 cm. longa; racemus laxe 4–8-fl., bracteis lanceolatis erectis, ovario brevioribus; sepala lateralia elliptica patentia, circa 1·1 cm. longa; sepalum impar posticum subgaleatum vel infundibulare, cum calcare late conico obtuso 1 cm. longum; petala subgalea abscondita suberecta falcato-oblonga obtusa, apice supra columnam incurva; labellum oblongum vel lanceolatum obtusum patens, 4 mill. longum; rostellum suberectum ovatum, brachiis abbreviatis; stigma pulvinatum, obscure trilobum; ovarium cylindricum, 1·5 cm. longum. (*Ex exempl. plur. viv.*)—*Orchis tripetaloides*, *Linnæus fil., Suppl. p. 398 (1781)*; *D. venosa*, *Lindley, Gen. & Sp. Orch. p. 351 (1838) non Swartz.*

Hab: South-western Region; CAPE COLONY: on the lofty southern slopes of the Langebergen, near the town of Swellendam, Jan. 16, 1815, *Burchell, 7409?*; same place, by streams, alt. from 900 to 1100 met., Jan. 1890, *Bolus, 7339*; Herb. Norm. Austr.-Afr., 1098. —(The commoner pink-fl. form extends widely from the Hottentot's-holland Mts. on the west to Natal on the east, and the following among other numbers may be cited: *Burchell, 6123*; *Zeyher, 3916*; *MacOwan, 1095*; *Bolus, 4209*; *J. M. Wood, 1981.*)

Plate 30. Figs. 1, 2, flowers; 3, a side sepal; 4, odd sepal; 5, 6, lip, from different plants,—all the foregoing magnified 2 diameters; 7, 8, flower, the sepals being removed; 9, column, with one petal left in position; 10, one of the pollinia,—all the latter variously magnified.

An erect or decumbent glabrous herb; stem somewhat flexuous, leafy below, clothed with herbaceous lanceolate acute sheaths; leaves 4–8, clustered at the base, ligulate acute, loosely spreading, 6–10 cm. long; raceme loosely 6–8-fl., bracts lanceolate shorter than the ovary; side sepals elliptical spreading, 1·1 cm. long; odd sepal posticous subgaleate or funnel-shaped,

together with the widely conical very obtuse spur 1 cm. long; petals hidden under the galea, nearly erect, falcate-oblong obtuse incurved and overarching the column; lip varying from oblong to lanceolate, obtuse spreading, about 4 mill. long; rostellum nearly erect, ovate, with short arms; stigma cushion-shaped, 3 lobed; ovary cylindrical, 1.5 cm. long.

Described from numerous living specimens. Flowers deep but bright golden yellow. I was long familiar with this wide-spread species in its usual colour (rosy pink, often with carmine spots); but it is so unusual for Cape Orchids to vary from such a colour into yellow that when I first found this I could hardly suppose it to be the same species. Yet it is undoubtedly so. The species varies somewhat in the length of the spur, those of the present form being amongst the shortest; but I have found equally short spurs amongst the red-flowered form. To quote Burchell's number is, I must confess, something of an assumption. His specimens exactly resemble mine, and were collected in the same locality 75 years earlier. But of the colour he says nothing in his diary, and the specimens afford no indication; we may only conjecture they were yellow. The pink-fl. form is in cultivation in England, and I saw a fine specimen at Kew in 1891, which was figured in the Bot. Mag. t. 7206, and which was more luxuriant than I have seen it in its wild state. The nearest congener of the species is *D. caulescens*, Lindley, represented in our next plate; with *D. venosa*, Swartz, for which Lindley mistook it, it has very little affinity. Lindley placed these species in the section Coryphæa; to which indeed they have some resemblance. But I think their prominent rostellum,—a character not very obvious in dried specimens, together with some other features, point them out rather as members of the Eu-disa group.



H. Bolus del.

P. Huth, Lith. Edin.

DISA CAULESCENS, LINDLEY.

TAB. 31.

Tribe OPHRYDEÆ.

Sub-tribe DISEÆ.

Genus DISA.

Disa caulescens, *Lindley, Gen. & Sp. Orch.* p. 351 (1838). (§ Eu-disa).

—Herba glabra spithamæa ad pedalem vel ultra; caulis gracilis foliosus subrectus flexuosusve adscendens; folia remota lineari-lanceolata acuta erecto-patentia, 2–4 cm. longa, superiora sensim minora; racemus laxè 3–12-fl., sæpe flexuosus, 3–7·5 cm. longus, bracteæ lineari-lanceolatae, ovariis fere æquilongæ; sepala lateralìa oblonga subobtusà, sub apice mucronulata, patentia, circa 1 cm. longa; sepalum impar galeatum obtusum erectum, basi in calcar conicum acutum pendulum productum, lateralibus fere æquilongum; petala late obovata, paullo exserta; labellum lineari-subulatum acuminatissimum, sepalis parum longius; rostellum erectum, brachiis abbreviatis divaricatis; stigma pulvinatum trilobum; ovarium gracile cylindricum. (*Ex exempll. plur. viv. exsiccatisque.*)

Hab: South-western Region; CAPE COLONY: Du Toit's Kloof, alt. 600–900 met., fl. Jan., *Drège, Tyson*; New Kloof, Tulbagh, Dec., *Zeyher*, 1568; foot of the Mts., near Ceres, amongst stones in rivulets, fl. Dec., *Bolus*, 7449.

Plate 31. Fig. 1, flower; 2, odd sepal; 3, a side sepal, under side; 4, ditto, upper side; 5, lip,—all the foregoing magnified 2 diameters; 6, flower, the sepals being removed; 7, column, with one of the petals only in position; 8, one of the pollinia,—all the latter variously magnified.

A glabrous weak-growing herb, from a span to a foot or more high; stem slender leafy straight or flexuous; leaves remote linear-lanceolate acute erect-spreading, 2–4 cm. long, the upper gradually smaller; raceme loosely 3–12-fl., usually flexuous, 3–7·5 cm. long, bracts linear-lanceolate, nearly as long as the ovaries; side sepals broadly oblong subobtusè, mucronulate below the apex, spreading, 1 cm. long; odd sepal galeate obtuse erect, produced at base into a short conical acute pendulous spur, the whole about as long as the side sepals; petals broadly obovate, partly exserted; lip linear-subulate, very acuminate, slightly longer than the side sepals; rostellum erect, with short

divaricate arms; stigma cushion-like, 3-lobed; ovary slender cylindrical.

Described from several living and dried specimens. Colour of the sepals and lip pure white, petals white with light purple stripes, or sometimes entirely purple. In the dried state the flowers of this species are puzzlingly like those of *D. tripetaloides*, and the two species are often confused in herbaria. Nevertheless it is quite distinct, and may usually be distinguished by the character of the remote leaves, which in the other species are crowded at the base of the stem. Besides this the side sepals are smaller in proportion to the galea, and, as noted, the petals and lip are differently shaped, the former more erect and half-exserted. The spur is somewhat variable in both, in *D. tripetaloides* it is usually thicker and blunter; but forms of the latter occur in which it is more slender, and then the flower more resembles externally that of the present species.



H. Bolus del.

F. Huth, Lith^r Edin^r

DISA SAGITTALIS, LINDLEY.

TAB. 32.

Tribe OPHRYDEÆ.

Sub-tribe DISEÆ.

Genus DISA.

Disa sagittalis, Swartz, in *Kongl. Vetensk. Acad. Nya Handl.*, vol. xxi, p. 212 (1800); *Lindley, Gen. & Sp. Orch.* p. 350 (1838)—(§ Coryphæa).—Herba, 7–20 cm. alta; caulis erectus aphyllus, vaginis membranaceis acutis arete involventibus vestitus; folia radicalia, 4–9, ligulata acuta, basi angustata, laxè patentia, 4–7 cm. longa; racemus sæpius abbreviatus subcorymbosus, rarius cylindricus oblongusve, flores patentes sub lente breviter pubescentes, bracteis membranaceis subchartaceisve, obtuse acutis, ovario brevioribus; sepala lateralìa oblonga acuta, 8 mill. longa; sepalum impar posticum, 1·2 cm. longum, e basi erectum oblongum sursum dilatatum alte bilobum, lobis obovato-cuneatis angulatis crenulatis basi subiter tortis, calcare pendulo conico obtuso, 3–4 mill. longo (vel filiformi 4–6 mill. longo); petala basi lata subreniformia, columnam obtegentia, sursum abrupte angustata lanceolato-subulata adscendentia, circa 1 cm. longa; labellum lanceolatum vel lineari-lanceolatum, modice undulatum, 8–9 mill. longum; rostellum perbreve; ovarium gracillimum rectum, capsula 1·8–2·5 cm. longum. (*Ex exempll. plur. viv. exsiccatisque*). *Orchis sagittalis*, *Linnaeus fil., Suppl.* p. 399 (1781); *Satyrium sagittale*, *Thunberg, Prodr. Plant. Cap.* p. 5 (1794).

Hab: **South-western Region;** CAPE COLONY: Outeniqua Mts., *Thunberg*: Plettenberg Bay, April, *Burchell*, 5344; Gyang R., *George, Young*; Humansdorp, Sept., *Tyson*, 2974.—**South-eastern Region;** CAPE COLONY: Grahamstown, alt. 750 met., Oct., *Galpin*, 307; Katberg, Dec., *Scully*, 162.—NATAL.

Plate 32. Fig. 1, flower, front view; 2, ditto, side view; 3, a petal; 4, a side sepal; 5, column, with one of the petals and the lip; 6, lip; 7, odd sepal,—all the foregoing magnified 3 diameters; 8, column, side view; 9, ditto, viewed from above; 10, one of the pollinia,—all the latter variously magnified.

A herb, 7–20 cm. high; stem erect, stout or slender, leafless, covered with closely wrapped acute membranous sheaths; leaves radical, 4–9, linear-oblong acute, narrowed to the base, weakly-spreading, 4–7 cm. long; raceme sometimes oblong or cylindrical,

sometimes short and subcorymbose, flowers spreading, minutely pubescent, bracts white membranous or papery, obtusely acute, shorter than the ovaries; side sepals oblong acute, 8 mill. long; odd sepal posticous, about 1·2 cm. long, oblong and erect from the base for about $\frac{2}{3}$ of its length, then deeply bilobed, lobes somewhat obovate angular crenulate, sharply twisted at their base so that their under surface is turned to the front, spur pendulous conical and blunt, 3–4 mill. long (or filiform and 4–6 mill. long); petals broad and subreniform at base, arching over the column, thence abruptly narrowed, lanceolate-subulate ascending and spreading, about 1 cm. long; lip lanceolate or linear-lanceolate, slightly waved, 8–9 mill. long; rostellum very low, the viscid surface of the pollinary glands on the under side; ovary slender straight, capsule 1·8–2·5 cm. long.

Described from several living and dried specimens. Colour of the flowers mostly pure white, the petals and lip sometimes faintly streaked or spotted with pink or purple. A very distinct species unlike any other, unless *D. attenuata*, Lindley, which I have never seen in a living state, nor of which have I had an opportunity of dissecting dried specimens. I suspect it to be a mere variety. From all others the present species seems well distinguished by its peculiarly twisted odd sepal, but this is not obvious, nor indeed easily to be made out, in dried specimens. The habit is very much that of *D. Draconis*, or *D. Harveiana* (which belong to the same group) in miniature.



TAB. 33.

Tribe OPHRYDEÆ.

Sub-tribe DISEÆ.

Genus DISA.

Disa torta, Swartz, in *Kongl. Vetensk. Acad. Nya Handl.*, vol. xxi, p. 211 (1800).—(§ *Schizodium*)—Scapus erectus gracilis rigidus, valde flexus, 2-3 cm. altus, vaginis foliaceis subcucullatis lanceolatis 3-4 ad internodia vestitus; folia sæpius 4 radicalia rosulata humistrata spathulata acuta, 1-1.4 cm. longa; racemus laxe 1-4-florus; sepala lateralibus arcuato-patentibus linearibus acuminatissima, margine incurvo, basin versus unidentato, 1.6-1.8 cm. longa; sepalum impar subconforme brevius recurvum, calcare horizontali vel adscendente compresso retuso quam limbo breviori auctum; petala basi columnæ adnata auriculata, deinde postice genuflexa, sursum lineari-falcata recurva bifida; labellum subpanduræforme, hypochilium inflato-concavum ovatum erectum, mesochilium ovatum carnosum deflexum, marginibus inflexis erosulis, intus papillis minutis conspersum, in epichilium filiforme rostriforme canaliculatum 4-8 mill. longum desinens. (*Ex exempl. plur. viv. exsiccatisque*). *Orchis biflora*, Linnæus, *Spec. Plant.* ed. 2, p. 1330 (1768); *Satyrium tortum*, Thunberg, *Prodr. Plant. Cap.* p. 5 (1794); *Schizodium arcuatum*, Lindley, *Gen. & Sp. Orch.* p. 359 (1838).

Hab: South-western Region; CAPE COLONY: on the summit of the mountain near Constantia, Cape Peninsula, alt. 650 met., fl. Sept., Krauss, 1326 (fide Meisner in "Flora" for 1845, p. 306); Paarl and Groene Kloof, Drège; Stellenbosch, Aug., Miss Farnham, *Herb. Norm. Austr.-Afr.*, 1376; Valley of the Bot R., alt. 125 met., July, Bolus, 5444; Artois near Tulbagh, alt. 180 met., Aug., *ib.* 5445.

Plate 33. Fig. 1, flower; 2, odd sepal; 3, 4, lip,—all the foregoing magnified 3 diameters; 5, column with petals, front view; 6, ditto, side view; 7, one of the petals,—all the latter magnified 6 diam.; 8, column, viewed posteriorly, the pollinia removed; 9, pollinia,—all the last variously magnified.

Scape erect slender wiry rigid, much bent at the internodes, 7-20 cm. high, clothed with a few herbaceous somewhat cucullate lanceolate sheaths; leaves radical usually 4, rosulate spathulate acute, lying flat upon the ground, 1-1.4 cm. long; raceme loosely 2-3-fl.; side sepals linear very much acuminate, arched

and spreading, wider and toothed on the upper margin towards the base, margins incurved, 1·6–1·8 cm. long; odd sepal similar but shorter and recurved, with a horizontal or ascending compressed retuse spur, about $\frac{2}{3}$ of the length of the limb; petals with an erect earlike lobe in front, knee-bent behind, then falcate-linear recurved and bifid at the apex; lip somewhat fiddle-shaped, the lower part (hypochilium) ascending ovate inflated-concave, the middle (mesochilium) sharply deflexed, ovate, margins inflexed erosulate, somewhat fleshy, with minute papillæ scattered on its surface, suddenly contracting into the upper part (epichilium) which is filiform, beak-like, minutely channelled in front, 4–8 mill. long.

Described from numerous living and dried specimens. Colour of the flowers varying from pale lilac to rose-red, with minute greenish spots on the surface of the mesochilium of the lip, and larger pale purple spots on the petals. This seems to be a variable plant in the length and degree of curvature of the sepals, by both which characters it is well distinguished from all its congeners, except perhaps *D. longipetala* (*Schizodium longipetalum*, Lindley), which, however, is probably a mere variety of our present plant, characterised by slight differences in the petals.



TAB. 34.

Tribe OPHRYDEÆ.

Sub-tribe DISEÆ.

Genus DISA.

Disa clavigera, *Bolus, Orch. Cape Penins.* p. 163 (1888)—(§ *Schizodium*).—Scapus erectus gracillimus rigidiusculus, ad internodia flexus, vaginis cucullatis 2-3 vestitus, 7·5-12·5 cm. altus; folia radicalia 3-5 rosulata spathulata acuta laxa patentia, fere 1 cm. longa; racemus laxe 2-6-florus, pedicellis adscendentibus per anthesin elongantibus, inferioribus cum ovariis 1·4-1·6 cm. longis; sepala lateralibus oblongo-lanceolata acuta, 5 mill. longa; sepalum impar brevius subconforme, magis concavum, decumbens, calcar filiformi adscendente vel horizontali, apicem versus inflato retuso limbo æquilongum; petala oblonga, oblique torta, apice truncata dentataque, basi parum ampliata; label- lum subpanduræforme, hypochilium rotundatum concavum adscendens, mesochilium ovatum convexum deflexum, in epichilium subulatum rostriforme marginibus inflexis gradatim contractum, totum sepalis subæquilongum. (*Ex exempl. plur. viv.*) *Schizodium clavigerum*, *Lindley, Gen. & Sp. Orch.*, p. 360 (1838).

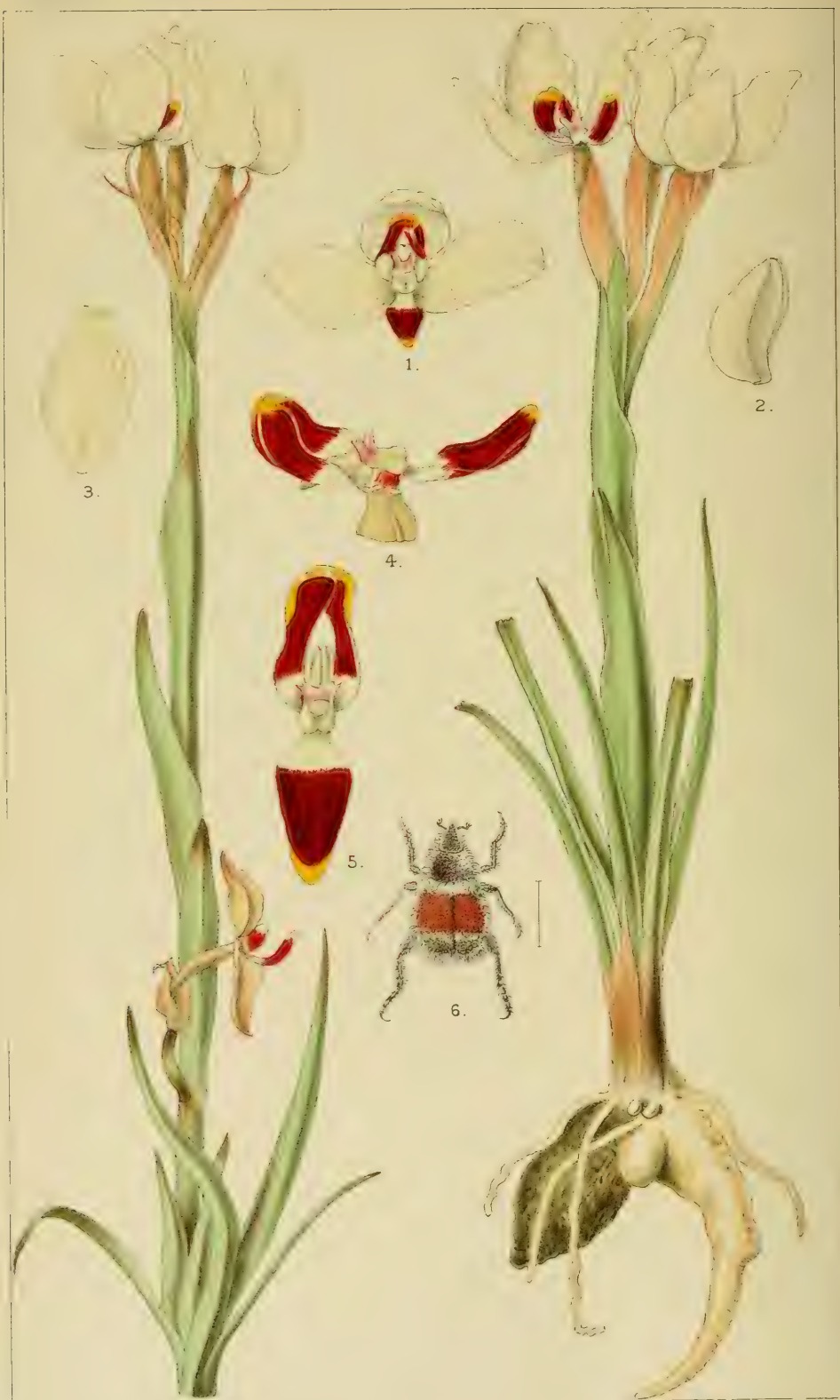
Hab: South-western Region; CAPE COLONY: rocky places on Table Mt. near Cape Town, fl. Sept., *Ecklon & Zeyher* (fide Sonder); Paarl and Groene Kloof, *Drège*; near Stellenbosch, alt. 90 met., fl. Aug., *Miss Farnham* (5923 in my herb.); slopes of the Zwarteberg, near Caledon, alt. 520 met., fl. Sept., *Bolus*, 7514.

Plate 34. Fig. 1, 2, flower, front and side view,—magnified 4 diameters; 3, a side sepal; 4, odd sepal, viewed from above; 5, lip, front view; 6, ditto, side view; 7, column with petals, front view; 8, column, with one petal, side view,—all the latter magnified 6 diameters; 9, one of the pollinia, magnified.

Scape erect very slender wiry rigid polished, bent at the internodes and furnished with 2-3 cucullate sheaths, 7·5-12·5 cm. high; leaves 3-5, radical rosulate spathulate acute, loosely spreading, nearly 1 cm. long; raceme loosely 2-6-fl., pedicels ascending, lengthening during the flowering, the lower ones with the ovaries about 1·5 cm. long; side sepals oblong-lanceolate acute spreading, 5 mill. long; odd sepal similar but shorter and more concave, decumbent, spur filiform ascending or horizontal,

inflated towards the apex, retuse, about as long as the limb ; petals oblong, obliquely twisted, truncate and toothed at the apex, slightly widened at the base ; lip somewhat fiddle-shaped, the lower part (hypochilium) rounded concave ascending, middle part (mesochilium) ovate concave deflexed, minutely warty with toothed margins, gradually contracted into the upper part (epichilium) which is subulate beak-shaped, margins inflexed, the whole about as long as the sepals.

Described from several living specimens. Flowers light pink with lilac spots on the lip, tips of the petals and lip red. This is a very elegant little species, and, generally, the small size of its flowers distinguishes it from any of its congeners. Mr. R. Schlechter, however, who has paid particular attention to this group, is of opinion that the present species with *Schizodium rigidum*, *S. obliquum*, and *S. obtusatum*, all of Lindley, should be regarded as one species under the name *Disa bifida*, Swartz. As to the three last named, I believe he is right. But though very small specimens of *S. obliquum* certainly much resemble the present species, I have not yet seen plants which satisfy me that the two species should be united, while admitting that quite possibly they may ultimately prove to be members of one very variable species.



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DISA ELEGANS, REICHENBACH FIL.

TAB. 35.

Tribe OPHRYDEÆ.

Sub-tribe DISEÆ.

Genus DISA.

Disa elegans, *Reichenbach fil.*, in "*Flora*," 1865, p. 182—(§ Orthocarpa).—Herba glabra erecta, 10–20 cm. alta; folia pleraque radicalia, 5–6, lineari-ligulata acuminata, 4–8 cm. longa, in bracteas foliaceas lanceolatas erectas abeuntia; racemus abbreviatus subcorymbosus, 2–4-florus; bracteæ membranaceæ lanceolatæ vel ovatæ acutæ erectæ coloratæ, ovaria nunc amplexantes, nunc eis approximata et æquilongæ; sepala ovata obtusa patenti-erecta, circa 2 cm. longa, vel impar anticum lateralibus paullo brevius; petala reclinata oblique oblonga obtusissima, apice incurva imbricantia, circa 1 cm. longa; labellum lanceolato-rhombeum obtusum subcarnosum, petalis æquilongum; anthera resupinata; rostellum erectum retusum; stigma pulvinatum 3-lobum; ovarium cylindricum, costis tortis prominentibus, 1·8 cm. longum. (*Ex exempl. plur. viv.*) *Penthea elegans*, *Sonder*, in *Linnaea*, vol. xx, p. 220 (1847), (nomen).

Hab: **South-western Region;** CAPE COLONY: Appel's Kraal, district of Caledon, near the Zondereinde R., fl. Nov., *Ecklon & Zeyher*, 3934; in moist peaty soil on the rocky sides of the Skurfdebergen, near the village of Ceres, at about 1060 meters altitude, Dec. 17, 1891, *A. Bodkin* (No. 7372 in my herb.); on the Langebergen near Zuurbraak, Swellendam, deflorate in Jan., *Schlechter*.

Plate 35. Fig. 1, flower; 2, odd sepal; 3, a side sepal,—all the foregoing of the natural size; 4, flower, the sepals being removed, side view; 5, ditto, viewed from above,—the latter figures enlarged; 6, *Peritrichia* sp., magnified 2 diameters.

An erect glabrous herb, 10–20 cm. high; leaves chiefly radical, 5–6, linear-ligulate acuminate, 4–8 cm. long, passing into leaf-like lanceolate erect sheaths; raceme very short subcorymbose, 2–4-fl., bracts membranous, lanceolate or ovate, acute netted-veined coloured, often enwrapping the ovary and equally long; sepals ovate obtuse spreading-erect, about 2 cm. long, or the anticus odd sepal a little shorter than the side sepals; petals reclined, obliquely oblong, very obtuse, incurved at the apex and folding over each other; lip lanceolate-rhom-

boidal obtuse, somewhat fleshy, as long as the petals; anther resupinate; rostellum short erect retuse; stigma cushion-like, 3-lobed; ovary cylindrical, ribs twisted prominent, 1·8 cm. long.

Described from several living plants. Colour of the sepals creamy white; petals and lip white at base, then maroon for the greater part of their length, tipped with deep orange. This species is closely allied to *D. Bodkini, mihi* (*Orchids of the Cape Peninsula*, p. 165, t. 13). It is, however, distinct, by its chiefly radical leaves, shorter and membranous bracts, differently shaped and differently set petals, lanceolate-rhomboidal lip, and longer and more slender ovaries. In the living state its white sepals render it easy of identification. Without doubt it belongs to the same group as the last-named, which, before I knew this species I called *Orthocarpa*, because of the untwisted ovary, and the resulting posticous lip. But in the present species the same result, or nearly the same, is produced in a curiously different way. The ovary has here nearly a whole turn or twist (in most *Disæ* it has a half-twist) and this, of course, brings the lip also into a nearly posticous position as regards the axis of growth. This is the only instance of the kind I have ever seen in the genus. The small aborted branch with a single flower near the base of the plant represented, only occurred on one specimen and was doubtless the result of some accidental check to the growth.

Upon one of the flowers was found a beetle, *Peritrichia* sp., as my friend M. Peringuey informs me, belonging to a group of well-known fertilisers, and which had a pollinium attached to its thorax. This being only the second instance of an insect actually carrying orchid pollen which I have seen during many years' study of Cape orchids, I have thought it desirable to figure it with the plant.



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DISA RICHARDIANA, LEHMANN.

TAB. 36.

Tribe OPHRYDEÆ.

Sub-tribe DISEÆ.

Genus DISA.

Disa Richardiana, *Lehmann, ex Lindley, Gen. & Sp. Orch.*, p. 361 (1888).—(§ *Orthocarpa*).—Herba glabra pusilla; caulis erectus vel subdecumbens foliosus, 5–20 cm. altus; folia 5–8, pleraque ad basin conferta oblongo-lanceolata acuta laxa patentia, inferiora 2·5–5 cm. longa, superiora minora, sensim in vaginas foliaceas abeuntia; flores 3–8, corymboso-capitati conferti, bracteæ lanceolatae ovariis æquilongæ eaque involventes; sepala lateralalia late ovata obtusissima patentia, apicem versus concava, incurva, 6–8 mill. longa; sepalum impar ovatum cucullatum obtusissimum reclinatum, basi sacculo conico perbrevis auctum; petala nana, fere oblonga, reclinata, sub sepalis impari abscondita, apice dente incurvo aucta, circa 4 mill. longa; labellum posticum oblongum obovatumve obtusissimum vel truncatum, 3 mill. longum; anthera reclinato-adscendens; rostellum brachia perbrevia divaricata, lobulo rotundato interjecto; glandulæ dissitæ. (*Ex exempl. plur. viv.*) **Penthea obtusa**, *Lindley, Gen. & Sp. Orch.*, p. 361 (1888).

Hab: South-western Region; CAPE COLONY: Table Mt., Cape Peninsula, on moist turf banks, from 770 to 1050 meters altitude, fl. Sept.–Oct., *Harvey*, 121; *Bolus*, 4846; *Herb. Norm. Aust.-Afr.*, 168.

Plate 36. Fig. 1, flower, front view; 2, ditto, the side sepals being removed; 3, one of the side sepals,—all the foregoing magnified 3 diameters; 4, a petal; 5, ditto, from a flower of another plant; 6, lip; 7, ditto, from flower of another plant,—all the latter magnified about 6 diameters; 8, column, with one petal in position, side view; 9, ditto, front view,—the two last variously magnified.

A small glabrous herb; stem erect or subdecumbent, leafy, 5–20 cm. high; leaves 5–8, chiefly crowded at base, oblong-lanceolate acute lax spreading, the lower 2·5–5 cm. long, the upper smaller passing gradually into leafy sheaths; flowers 3–8, crowded into a corymbose head, bracts lanceolate about as long as the ovary and enwrapping it; side sepals broadly ovate, very obtuse, spreading, concave towards the apex, incurved, 6–8 mill. long; odd sepal ovate hooded, very obtuse, reclined, with a very

short conical sac at the base; petals very small, reclinate, included in the odd sepal, nearly oblong, with a small incurved tooth at the apex, about 4 mill. long; lip posticous oblong or obovate, very obtuse or truncate, 3 mill. long; anther reclined; arms of the rostellum shortly divaricate, with a rounded intermediate boss; glands distant.

Described from numerous living specimens. Colour of the sepals pure white, the side sepals tipped with pink; petals and lip golden yellow. A small but very lovely and delicate little species hitherto only recorded from Table Mt., where, with *D. rosea*, *Lindley*, it studs the little ridges of turf below or between the rocks which face the rising sun on the eastern side of the mountain. The specimen drawn is considerably above the average size, in fact the largest I have ever seen. More usually they are less than a span high, and the lower part of the stem is sunk deeply in loose turfy soil. To see this and its companion in their glory the lover of nature should climb the mountain very early in the morning after rain in September, when the rays of the low sun darting through each tiny drop of water on the flowers shows alternately the brilliant sparkle of the diamond and the softer restful clouding of the opal.



H. Bolus del.

F. Huth, Lithr. Edinr

DISA GRAMINIFOLIA, KER.

TAB. 37.

Tribe OPHRYDEÆ.

Sub-tribe DISEÆ.

Genus DISA.

Disa graminifolia, Ker, in *Journ. Sci. R. Inst. Lond.*, vol. vi, p. 44, t. 1, f. 2 (1819)—(§ *Herschelia*).—Glabra erecta, 30–60 cm. alta; tubera oblonga vel ovata, ad 4 cm. longa; folia 4–6, radicalia linearia graminoides laxa, scapo breviora; scapus gracilis rigidus, vaginis acutis membranaceis vestitus; racemus laxe 3–6-fl., bracteis lanceolatis acuminatis ovario brevioribus; sepala lateralibus oblonga obtusa, sub apice mucronulata, patentia circa 1·6 cm. longa; sepalum impar galeatum erectum emarginatum, ore lato subrotundo, lateralibus subæquilongum, calcare brevi inflato horizontali, 4 mill. longo; petala basin versus oblonga rotundata, deinde subito geniculato-inflexa, apicem versus rotundato-dilatata; labellum oblongum obtusum undulatum patens demum angulato-revolutum; anthera reclinata; glandula sæpius unica oblonga (rarius 2); rostellum trifidum erectum; ovarium cylindrico-clavatum, 1–1·2 cm. longum. (*Ex exempl. plur. viv.*) *Herschelia cælestis*, Lindley, *Gen. & Sp. Orch.* p. 362 (1838); Reichenbach fil. in *Orchidographia Europæa*, t. 2, ff. 18, 19, 20 (analysis); Bolus, in *Journ. Linn. Soc. (Bot.)* vol. xix, p. 234 (1882).

Hab: South-western Region; CAPE COLONY: Table Mt., on the sides and top, alt. from 300 to 1100 met., fl. Febr.–March, common, *Herb. Norm. Aust.-Afr.*, 167; mts. about Genadendal, and near Swellendam, 300–400 met., fl. Jan., *Bolus*.

Plate 37. Fig. 1, side sepals; 2, odd sepal; 3, a petal,—all the foregoing magnified 2 diameters; 4, lip, mag. 3 diams.; 5, flower, the sepals removed, mag. 2 diams.; 6, 7, column, back and front view; 8, 9, 10, ditto, the pollinia and gland being removed, back, front, and side view; 11, pollinarium,—all the latter variously magnified.

Glabrous erect, 30–60 cm. high; tubers oblong or obovate, 2–4 cm. long; leaves 4–6, radical linear grass-like lax, shorter than the scape; scape slender rigid, with acute membranous closely-clasping sheaths; raceme laxly 3–6-fl., bracts lanceolate acuminate, shorter than the ovary; side sepals oblong obtuse, mucronulate below the apex, spreading, about 1·6 cm. long; odd sepal galeate erect emarginate, mouth wide and round, about as long as the side sepals, with a short inflated horizontal spur, 4

mill. long; petals reclinate, roundish oblong in the lower part, then suddenly bent upward at a right angle and dilated, the rounded cuneate extremities forming together a green eye-like centre to the flower; lip oblong obtuse waved spreading, at length angularly revolute; anther reclinate; gland most usually single oblong, longer than wide (or more rarely 2); rostellum 3-cleft erect; ovary clavate-cylindrical, 1-1.2 cm. long.

Described from numerous living specimens. The sepals are an intensely bright and beautiful blue; the petals usually purple below, with a bright green upper limb; lip pale blue or white, edged with dark blue or purple. I have seen one plant with all the flowers pure white, except that the petals and lip were edged with a faint pink. Lindley described the flower as having two pollinary glands. Reichenbach (*De Pollinis Orchidearum Genesi*, p. 31) found specimens with both one and two glands. Both these writers dissected dried and soaked flowers only. I have never been able to find more than one gland, although I have examined very many plants. On this variation Reichenbach (*loc. cit.*) observes:—There are either two (or three?) genera with exactly the same external appearance and different gynostemium, or one genus with a 2- (or 3-?) morphous gynosteme. Lindley also describes a dorsal linear appendage, tuberculate on either side, and situate in front of the anther. An inspection of Lindley's drawing shows that this organ is that which I have called the middle lobe of the rostellum; while his middle lobe is apparently a fold of the rostellum drawn out in the dissection of the dried specimen, but which is quite invisible in the living state. It is one of the commonest species within our limits, has a rather long flowering period, and attracts universal observation by its beauty and brilliancy; so much so, that Lindley, in dedicating it to the great astronomer, Herschel (who also was a great orchid-lover and cultivator), felicitously speaks of it as "*species hæc pulcherrima colore cæli australis intensè cæruleo superbiens.*" It is very generally accompanied by *D. ferruginea*, Swartz. Its nearest ally seems to be *D. purpurascens*. The drawing from which Ker's figure was taken was made at the Cape in Masson's time, and in spite of repeated efforts it does not yet appear to have been successfully grown in England. It may be expected that this difficulty will eventually be conquered, and if so the species will soon become deservedly popular amongst orchid cultivators. Horticulturists will do well to remember that during its flowering period in its native home the plant receives little or no water to its roots, being dependent for moisture on what is stored up in its large tuber, and upon the occasional mists which envelop the mountain sides.



H. Bolus del.

F. Huth, Lith. Edin?

DISA FERRUGINEA, SWARTZ.

TAB. 38.

Tribe OPHRYDEÆ.

Sub-tribe DISEÆ.

Genus DISA.

Disa ferruginea, Swartz, in *Kongl. Vetensk. Acad. Nya Handl.* vol. xxi, p. 210 (1800); *Thunberg, Flor. Cap.* ed 1823, p. 11— (§ *Oregura*).—Herba glabra elata; folia 4–8 radicalia linearia acuminata graminioidea, scapo sæpius breviora, per anthesin emarcida; scapus erectus teres subflexuosus rigidus, 25–37 cm. longus, vaginis membranaceis distantibus setaceo-acuminatis præditus, basi fibris foliorum delapsorum cinctus; spica late ovata pyramidalisve, sæpius dense multiflora, 5–9 cm. longa, bractee ovato-acuminatæ, floribus breviores; sepala lateralia oblonga acuta, sub apice setaceo-mucronata, porrecta, 1.25 cm. longa; sepalum impar galeatum ovato-infundibulare acuminatum, cum calcare sensim attenuato filiformi adscendente circa 2 cm. longum; petala nana, sub galea abscondita, falcato-acuminata basi ampliata; labellum lanceolatum acuminatum, minute undulatum, 1.2–1.4 cm. longum; rostellum perbreve latum; glandule subdistantes. (*Ex exempll. plur. viv.*). *Satyrium ferrugineum*, *Thunberg, Prodr. Plant. Cap.* p. 5 (1794); *D. porrecta*, *Ker, in Journ. Sci. R. Inst. Lond., vol. v, t. 1, f. 1* (1818) non Swartz; *Hooker, Icon. Plant., t. 214* (1840); *Bolus, Orch. Cape Penins.* p. 172 (1888); *ib., in Journ. Linn. Soc. (Bot.) vol. xxv, p. 175* (1889).

Hab: South-western Region; CAPE COLONY: Table Mt., near Cape Town, common, from 215 to 1080 meters alt., fl. Febr.–Apr., many collectors,—*MacOwan*, 2419, *Bolus*, 4764, *Herb. Norm. Aust.-Afr.*, 165,—all erroneously distributed as *D. porrecta*, Swartz; also Hottentot's-holland Mts., *Burchell*, 8199; *Swellendam*, *Kennedy*, 31.

Plate 38. Fig. 1, flower, with bract; 2, side sepals; 3, odd sepal; 4, petals; 5, lip,—all the foregoing magnified 2 diameters; 6, column, with petals; 7, column, side view; 8, one of the pollinia,—all the latter variously magnified.

A tall glabrous herb; leaves 4–8 radical linear acuminate grass-like, shorter than the scape, withered at the flowering period; scape erect terete subflexuous rigid, 25–37 cm. long, with distant membranous acuminate sheaths, clothed at base with the fibres of old leaves; spike broadly ovate or pyramidal, usually

densely many-fl., 5–9 cm. long; bracts ovate acuminate shorter than the flowers; side sepals oblong acute, bristle-tipped on the under-side shortly below the apex, projecting forward, about 1.25 cm. long; odd sepal galeate ovate-funnel-shaped, tapering and acuminate at the apex, gradually tapering at base into an ascending filiform spur, the whole about 2 cm. long; petals very small, hidden under the galea, falcate-acuminate, widened at base; lip lanceolate acuminate, minutely waved, 1.2–1.4 cm. long; rostellum very short and broad; glands somewhat distant.

Described from numerous living specimens. Colour varying from a bright to a dark orange vermilion. I have seen one or two plants with deep cream-coloured flowers; these are very rare. The species is abundant on Table Mt., and largely sold in bouquets in the streets. It was for long confused with *D. porrecta*, Swartz, an error originating with Thunberg, continued by Ker and Lindley, and only finally cleared up by Mr. N. E. Brown, of the Royal Herbarium, Kew, who examined the type sheets in the Swartzian herbarium, now at Stockholm. He found that *D. porrecta* was the plant that had been called by Sonder *D. Zeyheri*, and which is figured in our next plate. So far as is at present known the present species is an exclusively western plant, the easternmost recorded station being Swellendam; while *D. porrecta* is chiefly south-eastern in its distribution, only just touching the South-western Region at Eland's River and Long Kloof.



TAB. 39.

Tribe OPHRYDEÆ.

Sub-tribe DISEÆ.

Genus DISA.

Disa porrecta, Swartz, in *Kongl. Vetensk. Acad. Nya Handl.*, vol. xxi, p. 211 (1800)—(§ *Oregura*).—Herba glabra elata; folia radicalia 4–6, linearia vel lineari-lanceolata acuminatissima laxa graminoides, scapo sæpius breviora, per anthesin emarcida; scapus teres rigidus substrictus erectus, 35–55 cm. longus, vaginis distantibus setaceo-acuminatis vestitus, basi fibris foliorum delapsorum cinctus; spica oblonga multiflora 5–10 cm. longa, 3–3.75 cm. lata, bracteis lanceolatis membranaceis setaceo-acuminatis ovarium subæquantibus; sepala lateraliter elliptica vel suborbicularia obtusa, sub apice mucronata, circa 8 mill. longa; sepalum impar galeatum ovatum emarginatum, in calcar cylindricum obtusum adscendentem fere rectum 3–4 cm. longum productum; petala nana, sub galea abscondita, falcato-oblonga, basi auriculata; labellum oblongum vel lanceolatum subacutum patenti-deflexum, 1 cm. longum; rostellum breve; glandulæ approximatae. (*Ex exempll. plur. viv.*) *D. Zeyheri*, Sonder, in *Linnaea*, vol. xix, p. 95 (1847).

Hab: **South-western Region**; CAPE COLONY: Long Kloof near Groot River, *Burchell*, 5014.—**South-eastern Region**; CAPE COLONY: Eland's River Mts., Uitenhage, March, *Ecklon & Zeyher*; Brookhuizen's Poort, near Grahamstown, alt. 730 met., March, *J. Glass*; Boschberg, near Somerset East, alt. 1380 met., Feb.–Mch., *MacOwan*, 1532; Koudveld Mt., Graaff Reinet, alt. 1380 met., Jan., *Bolus*, 1298.

Plate 39. Fig. 1, side sepals, under and upper surface; 2, odd sepal, looking into the throat; 3, petals; 4, lip; 5, lip from another plant,—all the foregoing magnified 2 diameters; 6, column, with petals and lip, side view; 7, column with petals, front view; 8, one of the pollinia,—all the latter variously magnified.

A tall glabrous herb; leaves 4–6, radical linear or linear-lanceolate, very acuminate, lax grass-like, usually shorter than the scape, withered during the flowering period; scape terete rigid, nearly straight, erect, with distant acute sheaths, clothed at base with the fibres of old leaves; spike oblong many-fl., 5–10 cm. long, bracts lanceolate acuminate membranous, about as

long as the ovary; side sepals elliptical-rotund obtuse, mucronate below the apex, about 8 mill. long; odd sepal galeate ovate emarginate, produced at base into a cylindrical obtuse ascending nearly straight spur, 3-4 cm. long; petals very small, hidden under the galea, falcate-oblong, eared at base; lip oblong or lanceolate subacute spreading-deflexed, 1 cm. long; rostellum short; glands approximate.

Described from several living and dried specimens; the drawing made from a plant sent by Mr. J. Glass from near Grahamstown. Colour of the galea chiefly a rich orange vermillion, varying in shade, the margins as also the sepals, petals and lip orange. This species seems to take the place in the South-eastern Region of *D. ferruginea* in the South-western. See the further remarks under the preceding species.



H. Bolus del.

F. Huth, Lith. Edin.

BROWNLEECA CAERULEA, HARVEY.

TAB. 40.

Tribe OPHRYDEÆ.

Sub-tribe DISEÆ.

Genus BROWNLEEÆ.

BROWNLEEÆ, *Harvey, ex Lindley, in Hook. Lond. Journ. Bot., vol. 1, p. 16 (1842); Sonder, in Linnæa, vol. xix, p. 106 (1847); Benth & Hooker, Gen. Plant. vol. iii, p. 631 (1883).*—Sepala æquilonga, posticum cum petalis erectis æquilongis in galeam agglutinatum, calcaratum, lateralia libera, patentia, vel rarius plus minus connata. Petala lata integra vel lobata, basi ad latera columnæ adnata. Label- lum basi semi-annulare, columnæ basin arcte cingens eoque coalitum, lamina minima angusta libera erecta patensve, vel ad stigmatis faciem arcte applicita. Columna brevissima, rostellum eminens erectum bilobatum bipartitumve; stigma sub rostello pulvinatum crassius- culum. Anthera resupinata incurva, loculis parallelis, apicibus in canales caudiculiferos in lobos rostelli adscendentibus productis; pollinia in loculis solitaria laxè granulosa, glandulis distinctis in apici- bus rostelli horizontaliter positis. Capsula erecta cylindrico-clavata erostris.—Herbæ terrestres glabræ, caule gracili longiusculo, distanter 3-vel rarius 2-foliato. Folia sæpius angusta, vel in una specie latius- cula. Flores laxè racemosi, dense spicati, vel subcapitati.

Genus Disæ arcte affine; differt petalis cum sepalò impari aggluti- natis, præsertim forma labelli, aliisque notis momenti minoris.

Brownleea cœrulea, *Harvey, loc. cit.; Thes. Cap., vol. ii, p. 2, t. 104 (1863).*—Caulis 15–37 cm. altus erectus subflexuosus teres, basi vagina longa inclusus; folia 3 caulina remota oblongo-lanceolata acuta patentia vel adscendentia, obscure trinervia, inferius 6–11 cm. longum, superiora minora; racemus subpyramidalis, 3–12-fl., floribus patentibus, bracteis foliaceis ovaria subæquantibus; sepala lateralia semi- ovata porrecto-deflexa, 1 cm. longa; sepalum impar (cum petalis) galeatum infundibulare acuminatum, sensim in calcar gracile arcuatum pollicarem productum; petala oblonga, ore galeæ æquilonga; labellum lineare erectum, ad stigma arcte applicitum eoque æquilongum (vix 2 mill.); rostellum adscendens, lobo medio majusculo, basi bitubercula- tum; anthera reclinato-incurva, glandulis pollinium distantibus; ovarium cylindricum, basi in stipitem brevem attenuatum. (*Ex exempl. plur. viv. exsiccatisque*). *B. macroceras*, *Sonder, in Linnæa, vol. xix, p. 106 (1847); Disa cœrulea, Reichenbach fil., Otia Bot. Hamb. p. 119 (1881).*

Hab: South-eastern Region; CAPE COLONY: in moist shady places; near King William's Town, March, 1841, *Rev. J. Brownlee*; Katberg, *Ecklon & Zeyher*; near Grahamstown, alt. 675 met., *MacOwan*, 232; Coldspring Farm, near ditto, *J. Glass*; Perie Forest, Jan., *T. R. Sim*, 14.—TRANS-VAAL REPUBLIC: summit of Makwongwa Range, near Barberton, alt. 1580 met., *E. Galpin*, 1257.

Plate 40. Fig. 1, flower, front view; 2, odd sepal; 3, one of the side sepals; 4, a petal, under side; 5, ditto, upper side,—all the foregoing magnified about 3 diameters; 6, lip, magnified about 10 diams.; 7, column, front view; 8, one of the pollinia,—the latter figures variously magnified.

Stem erect terete, somewhat flexuous, distantly leafy, the base enclosed in a long sheath, 15–37 cm. high; leaves 3, cauline remote oblong-lanceolate acute spreading or ascending, faintly 3-nerved, the lowest 6–11 cm. long, the upper gradually smaller; raceme subpyramidal, 3–12-fl., flowers spreading, bracts leaf-like about as long as the ovaries; side sepals semi-ovate spreading or protruding and deflexed, about 1 cm. long; odd sepal (together with the petals) galeate funnel-shaped acuminate, tapering gradually at base into a slender arched spur, 2–2·5 cm. long; petals oblong, as long as the mouth of the galea; lip linear erect, as long as the stigma (scarcely 2 mill.), and closely applied to its front; rostellum ascending almost vertically above the stigma, the posterior middle lobe rather large; glands of the pollinia distant; ovary cylindrical, tapering at base into a short pedicel.

Described from several living specimens received from Grahamstown, and from dried specimens. Colour of the flowers mauve, with dark purple spots on the sepals and petals. A very pretty and distinct species worthy of cultivation. From the elevation it reaches it cannot be tender, and the tubers would probably bear a little frost. Had the genus *Disa* not already been one of large size and very diverse structure I might have been tempted to follow Reichenbach in reducing the present to it. But the agglutination of the petals to the odd sepal does not occur in that genus, nor the remarkably small and peculiarly formed lip. The former character and the occasional clinging of the lip to the front of the stigmatic cushion plainly indicate a transition towards *Disperis*. But the distinction remains profound by the peculiar and much more differentiated character of both lip and column in the latter genus.



H. Bolus del.

F. Huth, Lith^r Edin^r

BROWNLEEAE RECURVATA, SONDER.

TAB. 41.

Tribe OPHRYDEÆ.

Sub-tribe DISEÆ.

Genus BROWNLEEÆ.

Brownleea recurvata, *Sonder, in Linnæa, vol. xix, p. 107 (1847); Harvey, Thes. Cap., vol. ii, p. 3, t. 104 (1863).*—Caulis 20–42 cm. longus, teres erectus subflexuosus, basi vagina inclusus; folia 3, caulina remota lanceolata acuminata erecta, inferius 6–7 cm. longum, superiora sensim minora; racemus sublaxus. 3–15-fl., bracteæ foliaceæ floribus subæquilongæ; sepala lateralia lanceolata acuta patentia vel deflexa, 7–8 mill. longa; sepalum impar (cum petalis) galeatum, dorso rotundatum. apice libero acuminato recurvato, basi in calcar subfiliforme arcuatum apice tumidiusculum ovario brevius productum; petala oblique falcato-lanceolata, ori galeæ æquilonga; labellum minutum lineari-subulatum, ad stigmatis faciem arcute applicitum, vix 2 mill. longum; rostellum erectum, brachiis parallelis, basi utroque latere tuberculo majusculo adscendente ornatum; anthera clavata; ovarium cylindrico-clavatum, basi attenuatum. (*Ex exempll. plur. viv. exsiccatisque*). *Disa recurvata*, *Reichenbach fil., Otia Bot. Hamb. p. 119 (1881).*

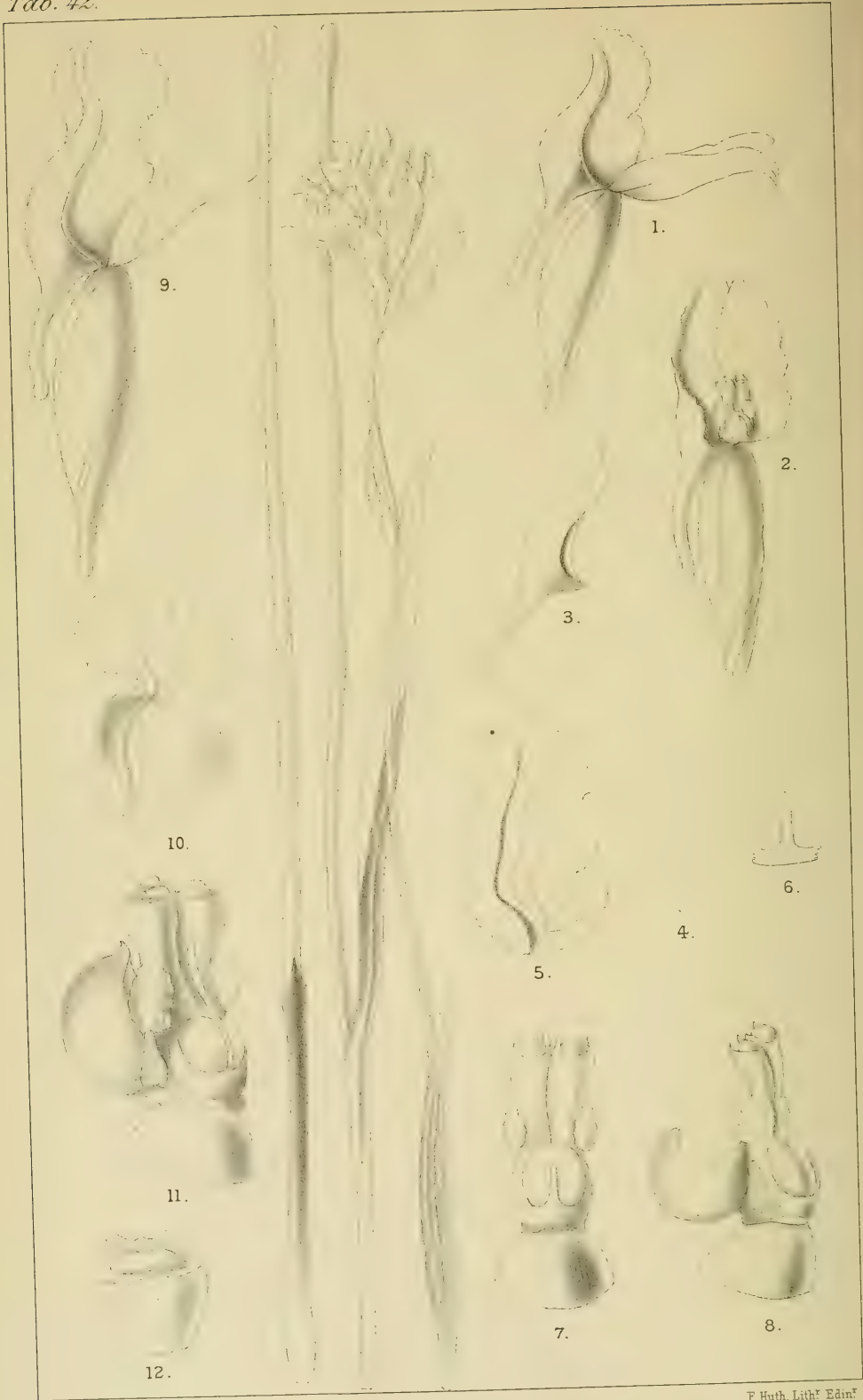
Hab: South-eastern Region; CAPE COLONY: on mountains, fl. Febr.–April; Eland's River, Uitenhage, *Ecklon & Zeyher*; Boschberg, Somerset East, alt. 1870 met., *MacOwan*, 526! Howison's Poort, near Grahamstown, alt. 750 met., *J. Glass*! Bazija Mt., Kaffraria, alt. 1070 met., *J. Baur*, 625!

Plate 41. Figs. 1, 2, flowers; 3, one of the petals,—the foregoing magnified about 3 diameters; 4, lip; 5, 6, 7, column, front, side, and back view, respectively; 8, one of the pollinia,—all the latter variously magnified.

Stem 20–42 cm. long, terete erect subflexuous, enclosed at base in a narrow sheath; leaves cauline, 3, distant lanceolate acuminate erect, the lowest 6–7 cm. long, the upper gradually smaller; raceme somewhat lax, 3–15-fl., bracts leaflike about as long as the flowers; side sepals lanceolate acute, spreading or deflexed, 7–8 mill. long; odd sepal (together with the petals) galeate, rounded at the back with a short free acuminate recurved apex, spur subfiliform arched, slightly swollen at the apex, shorter than the ovary; petals obliquely falcate-lanceolate, as

long as the mouth of the galea; lip minute linear-subulate, closely applied to the face of the stigma, scarcely 2 mill. long; rostellum erect, arms parallel, a large ascending tubercle on either side; anther large clavate; ovary cylindrical-clavate, narrowed at base.

Described from several living and dried specimens. Colour of the flowers lilac of various shades, the spur greenish, anther dark red. The habit is that of *B. parviflora*, but it is distinct by its laxer raceme, larger flowers, different lip, &c.



H. Bolus del.

F. Huth, Lithr Edinb

BROWNLEEAL GALPINI, Bolus.

TAB. 42.

Tribe OPHRYDEÆ.

Sub-tribe DISEÆ.

Genus BROWNLEEÆ.

Brownleea Galpini, *n. sp.*.—Herba glabra 18–60 cm. alta; caulis teres erectus, basi vagina acuta inclusus; folia 3, caulina remota lineari-lanceolata acuta 3-nerva erecta, inferius 10–13 cm. longum, superiora sensim minora: racemus abbreviatus subcapitatus ovatus vel hemisphericus, 8–12-fl., 1·8–3 cm. longus, bracteis foliaceis lanceolatis ovario brevioribus; sepala lateralia lanceolata acuta, 6 mill. longa; sepalum impar (cum petalis) galeatum infundibulare, sursum longe angustatum obtusum, apice libero subrecurvo, lateralibus æquilongum, in calcar filiforme ovario duplo brevius productum; petala subovata, margine antico undulato crispulatoque, basin versus lobato, ori galeæ æquilonga; labellum basi semi-annulare stigma arcte cingens, limbo libero lineari erecto minimo, circa 1 mill. longo; rostellum supra stigma erectum, brachiis elongatis parallelis approximatis, basi bituberculatum; anthera reclinato-incurva, loculis basi in canales caudiculiferos productis, glandulis approximatis horizontalibus; stigma pulvinatum adscendens: ovarium clavato-cylindricum, circa 1·2 cm. longum, basi in stipitem brevem attenuatum. (*Ex exempl. plur. exsicc., floribusque in sp. vini servatis.*)

Var. major: floribus plus quam quarta parte majoribus; petalis latioribus apice rotundatis, magis lobatis concavisque; labello duplo longiore.

Hab: South-eastern Region; CAPE COLONY: banks of streams near Kokstad, alt. 1540 met., March, Tyson, 1084!—TRANS-VAAL REPUBLIC: between Barberton and Swaziland, alt. 1400 met., March, E. E. Galpin, 1255!—**Var. major**: south side of Mt. Currie, near Kokstad, alt. 2000 met., March, Tyson, 1074!

Plate 42. Fig. 1, flower; 2, ditto, the sepals removed; 3, odd sepal; 4, a side sepal,—all the foregoing magnified about 4 diameters; 5, a petal, magnified about 6 diams.; 6, lip; 7, 8, column, with lip, front and side views,—all the latter variously magnified.—**Var. major**: 9, flower; 10, a petal, magnified about 4 diams.; 11, column with lip 12, apex of one of the arms of the rostellum,—all the latter variously magnified.

A glabrous herb 18-60 cm. high ; stem erect terete, the base enclosed in a long acute sheath ; leaves 3, cauline remote linear-lanceolate acute 3-nerved, the lowest 10-13 cm. long, the upper gradually smaller ; raceme very short subcapitate ovate or hemispherical, 8-12-fl., 1.8-3 cm. long, bracts leaflike lanceolate, shorter than the ovary ; side sepals lanceolate acute, 6 mill. long ; odd sepal (with the petals) galeate funnel-shaped, tapering upwards, obtuse, free at the apex and often recurved, as long as the side sepals, produced at base into a filiform spur about half the length of the ovary ; petals somewhat ovate, as long as the mouth of the galea, front margin waved and crisped, a rounded lobe near the base ; lower part of the lip a half-ring closely clasping the base of the stigma, lamina free linear erect, about 1 mill. long ; arms of the rostellum elongate parallel approximate.

Described from several dried specimens, and a raceme of each preserved in spirit. Mr. Galpin notes the flowers as "white, the petals purple spotted." The species is distinct by its petals and its very short raceme. The variety *major* looks at first sight different, but there are too many points of identity to justify specific distinction. In examining flowers of the latter, the glands seemed to be covered with a sort of indusium of nearly the same size and shape as the gland itself, and quite separable from it. These may have been produced by the action of the spirit on the viscid matter of the gland, and need further examination in the living plant.



H. Bolus del.

F. Huth, Lithr. Edinb.

BROWNLEEA PARVIFLORA, HARVEY.

TAB. 43.

Tribe OPHRYDEÆ.

Sub-tribe DISEÆ.

Genus BROWNLEEÆ.

Brownleea parviflora, *Harvey in Hook. Lond. Journ. Bot., vol. i, p. 16 (1842); Sonder, in Linnæa, vol. xix, p. 107 (1847).*—Herba spithamæa, pedalis vel ultra; caulis erectus cylindricus, basi vagina nervosa scabrido-hirta inclusus; folia sæpius 3, caulina remota lanceolata acuminata erecta, obscure nervosa, infimum 7–14 cm. longum, superiora sensim minora; spica cylindrica dense multiflora, 3–10 cm. longa, bracteæ foliaceæ acuminatissimæ erectæ, flores sæpe superantes, interdum duplo longiores; sepala lateralìa semi-ovata subacuta, ultra medium sæpius connata vel quandoque demum soluta, patentia vel deflexa, circa 4 mill. longa; sepalum impar (cum petalis) galeatum ovatum acutum sepalis æquilongum, calcare cylindrico arcuato-deflexo apice parum tumido, limbo subæquilongo; petala oblique ovata, margine antico subundulato, galea paullo breviora; labellum minutum, basi ampliatur columnæ adnatum limbo libero subulato patentiadscendente vix 1 mill. longo; rostellum ovatum erectum emarginatum utroque latere tuberculatum; pollinium glandulæ approximatæ; stigma pulvinatum adscendens; ovarium cylindrico-clavatum. (*Ex exempll. plur. viv. exsiccatisque*). *Disa parviflora*, *Reichenbach fil., Otia Bot. Hamb.* p. 119 (1881).

Hab: South-eastern Region; CAPE COLONY: near King William's Town, March (1841), Rev. J. Brownlee; Katberg, above the forest, March, Ecklon & Zeyher: Boschberg, alt. 1230 met., MacOwan, 1530!; Dohne Mt., T. R. Sim, 23!; Ingeli Mt., Griqualand East, alt. 1540 met., March, Tyson, 1080!; Coldstream, near Grahamstown, J. Glass!

Plate 43. Fig. 1, flower, side view; 2, ditto, front view; 3, odd sepal; 4, connate side sepals; 5, a petal; 6, lip,—all the foregoing magnified about 4 diameters; 7, column, front view; 8, ditto, side view; 9, ditto, posterior view; 10, one of the pollinia,—all the latter variously magnified.

From a span to nearly 1½ feet high; stem cylindrical, clothed at base with a nerved roughly hairy sheath; leaves usually 3, cauline remote lanceolate acuminate, faintly 3-nerved erect, the lowest 7–14 cm. long, the upper gradually smaller; spike cylin-

drical, densely many-fl., 3-10 cm. long, bracts leaf-like very acuminate, erect, longer than the flowers, sometimes twice as long; side sepals spreading or deflexed semi-ovate subacute, mostly connate beyond the middle, sometimes becoming at length separate, about 4 mill. long; odd sepal (with the petals) galeate ovate acute, as long as the side sepals, with a cylindrical arched deflexed spur, very slightly swollen at the apex and about as long as the limb; petals obliquely ovate, somewhat waved on the front margin, a little shorter than the galea; lip minute, clasping the column by its widened base, the limb free subulate spreading-ascending, less than 1 mill. long; rostellum ovate erect emarginate, tuberculate on each side; glands of the pollinia approximate; stigma pulvinate ascending; ovary cylindrical-clavate.

Described from several living and dried specimens. Colour of the flowers white, the spur and nerve of the petals greenish, the anther with a little purple. The species is very distinct and cannot be mistaken for any other.



TAB. 44.

Tribe OPHRYDEÆ.
Sub-tribe CORYCIÆÆ.
Genus DISPERIS.

Disperis Lindleyana, *Reichenbach fil.* in "*Flora*," 1865, p. 181.—Herba glabra 20–28 cm. alta; caulis erectus debilis, medium versus folium unicum cordatum acutum semi-amplexicaule interdum promi-
nenter venosum gerens, apice 1- vel rarius 2-fl., flore inferiori sessili, superiori (dum adsit) in pedicello 1·3 cm. longo, bractea foliacea cor-
data acuta, ovario multo brevior; sepala lateralia patentia, circum-
scriptione ovato-lanceolata acuta, fere 1 cm. longa, calcaribus truncatis
majusculis aucta; sepalum impar altigaleatum nervatum apice deflexum
acuminatum; petala oblique lanceolata, margine exteriori dentata,
intus fasciculi pilorum glanduliferum prædita; labellum erectum, basi
lineare sursum valde ampliatus, marginibus revolutis, deinde con-
tractum et in apicem subtruncatum alatum pilosum desinens, antice
appendice pendula curvata acuta marginibus revolutis ornata; rostellii
brachia patentia, apicibus glanduliferis recurvatis. (*Ex exempl. plur.
viv.*)

Hab: South-eastern Region; CAPE COLONY; "*Dr. Krebs*" (in
the year 1833); in a kloof 5 miles south of Grahamstown, fl. Dec.,
A. C. Galpin (No. 6232 of my herb.); on the Kagaberg Mt. near Bed-
ford, alt. about 1300 met., Dec., *A. Bodkin* (in my herb.); Katberg
Forest, Jan., *W. C. Scully*, 194!; woods near Komgha, alt. 610 met.,
Dec., *H. G. Flanagan*, 176!.—NATAL: *Buchanan* (in herb. Kew).—
TRANS-VAAL REPUBLIC: Kloofs on the Saddleback range near Barberton,
alt. 1230 met., fl. Dec., *Culver*, 85!

Plate 44. Fig. 1, flower, front view; 2, odd sepal, side view; 3, a
petal, front view,—all the foregoing magnified 2 diameters; 4, 5,
column, with lip, side and front views, magnified 3 diams.

A slender glabrous herb, a span or more high; stem erect sub-
flexuous, rather flaccid; leaf solitary, about half-way up the
stem, cordate semi-amplexicaul acute veined, 2·5–6·5 cm. long;
flower usually solitary sessile, sometimes 2-fl. the upper on a
slender pedicel 1–1·3 cm. long, bract foliaceous shorter than the
ovary; side sepals ovate acuminate horizontally spreading, the
upper portion deflexed, about 1 cm. long, widely saccate in the

middle, the sac or spur short broad and truncate; odd sepal galeate, rising about 1 cm. high, the acute point deflexed nearly to the base of the column; petals obliquely lanceolate, very acuminate, acutely toothed on the outer margin; lip nearly erect, rising from a ligulate base along the column, then expanding upward into a somewhat fiddle shape, contracted and channelled to the blunt glandular apex, appendage hanging from a little above the middle in front, and reaching more than half-way toward the base, acute, curved forward, flat appearing terete by its revolute margins; rostellary arms spreading horizontally, apices dilated oblique recurved.

Described from 2 living specimens from Grahamstown, which are represented in the plate, but I afterwards saw some much larger ones from Komgha. Colour of the flowers pale cream yellow, with light green dots on the galea, and a hairy purple patch on the petals. In the Kagaberg specimen the leaf was very smooth and shining, and somewhat livid below. The general structure of the lip is like that of *D. secunda*, but it is more erect. Reichenbach's description does not agree well with the plants I have examined, and was no doubt drawn up upon dried specimens. But I have seen at Kew a drawing of his type, with a copy of the attached label marked "*Cap. B. Spei., Dr. Krebs ded. 1833,*" now in the Royal Herb. Berlin, with an analysis of the flower, and this leaves no doubt of its identity. Both Dr. Krebs' specimens have the pedicel and bract of a second flower, which has either dropped or was aborted. Dr. Krebs was resident for some time at or near Bedford, whence he sent many plants to Europe, and he probably collected his specimens of this species also on the Kagaberg.



H. Bolus del.

F. Kuth, Lith? Edin?

CORYCIUM CRISPUM, SWARTZ.

TAB. 45.

Tribe OPHRYDEÆ.
Sub-tribe CORYCIEÆ.
Genus CORYCIUM.

Corycium crispum, Swartz, in *Kongl. Vetensk. Acad. Nya Handl.*, vol. xxi, p. 22 (1800); *Ker*, in *Journ. Sci. R. Inst. Lond.*, vol. vi, t. 1, f. 1 (*sub. C. bicolor*).—Herba erecta robusta, 20–30 cm. alta; caulis rectus, usque ad basin spicæ foliosus; folia 6–10, ligulata acuminata, margine crispo, lævia, subtus glauca, erecto-patentia, 7–15 cm. longa; spica cylindrica, dense multiflora, 3–4 cm. diam., flores late patentes, bracteis lanceolatis; sepala lateralialia connata antica falcato-lanceolata deflexa, demum apicem versus plus minus soluta; sepalum impar lanceolatum; petala oblique semi-sacciformia, basi rotundata inflataque; labelli limbus oblongus exsertus, ter latior quam longus, vix emarginatus, basi unguiculatus, appendice e basi crassa columnari deinde biloba, lobis majusculis ligulatis late incurvis; rostellum et stigmata 2, dissita, basi labelli appendicis posita. (*Ex exempll. plur. viv. exsiccatisque*). *Orchis coccinea*, Burbaum, *Cent.*, vol. iii, p. 7, t. 11 (1729); *Arethusa crispa*, Thunberg, *Prodr. Plant. Cap.* p. 3 (1794).

Hab: South-western Region; CAPE COLONY: Groene Kloof and Swartland, Thunberg, Drège, &c.; sandy downs, near Tigerberg, alt. 30 met., fl. Sept., Bolus, 3934; Raapenburg, near Cape Town, Guthrie.

Plate 45. Fig. 1, flower, front view; 2, ditto, back view; 3, a petal; 4, odd sepal,—all the foregoing magnified 3 diameters; 5, column, with lip, front view; 6, ditto, back view; 7, ditto, side view; 8, one of the pollinia,—all the latter variously magnified; the letter A indicates the appendage of the lip; L, the limb of the lip; a, the anther cells; s, the stigma.

Erect robust, 20–30 cm. high; stem straight, leafy to the base of the spike; leaves 6–10, ligulate acuminate, strongly crisped, smooth spreading-erect, 7–15 cm. long; spike cylindrical, densely many-fl., 3–4 cm. in diameter, flowers spreading horizontally, bracts lanceolate; side sepals connate, anticous deflexed falcate-lanceolate, becoming more or less separated towards the apex in age, 6–8 mill. long; odd sepal lanceolate; petals obliquely semi-sack-shaped, broadly rounded and inflated at base; limb of the lip exserted oblong, three times wider than its length, slightly

emarginate, clawed at base, the appendage rising thick and columnar, then separating into two strap-shaped arms curved horizontally forward, truncate and toothed at the apex; rostellum bipartite beaked, each arm bearing one of the erect distant cells of the anther on its anterior part; stigmas 2, pulvinate.

Described from several living and dried specimens. The limb of the lip and the tips of the petals are bright golden yellow, the rest of the flower pale yellow; all parts except the side sepals are very fleshy. Readily distinguished by the forward-curving arms of the appendage to the lip, and the crisped leaves. The former character may be compared with *C. microglossum*, but the arrangement of the anther and stigmas is very different.



TAB. 46.

Tribe OPHRYDEÆ.
Sub-tribe CORYCIEÆ.
Genus CORYCIUM.

Corycium microglossum, *Lindley, Gen. & Sp. Orch.* p. 369 (1839).

—Herba glabra erecta robusta, 15–35 cm. alta; caulis rectus foliosus; folia plura ligulata acuminata erecto-incurva, 6–10 cm. longa, superiora sensim minora, vaginis amplis caulem totum fere obtegentibus; spica oblonga dense multiflora, bracteis ovato-lanceolatis acuminatis apice ustulatis flores subsuperantibus; perianthium quam in congeneribus magis expansum erectumque; sepalum impar oblongum obtusissimum; sepala lateralibus antica coalita ovata emarginata concava membranacea deflexa; petala subquadrata concava, angulis exterioribus rotundatis, margine crenulato; labelli limbus linearis acutus deflexus, appendix e basi late unguiculata subspathulata emarginata, antice carinata inflexa; columna e duobus ligulis ad sese arcte applicitis horizontalibus, antice incurvis, quarum exterior (posterior) antheræ loculis, interior rostellum cum glandula, in utroque apice ferunt; stigmata 2, antica, in processu interiori utroque latere labelli basin versus posita. (*Ex exempl. plur. viv.*)

Hab: South-western Region; CAPE COLONY: Paarlberg, *Drège*; Klip-fontein, *Zeyher*, 1575; near Vyge Kraal, Cape Flats, alt. about 12 met., fl. Nov. 19 (1890), *G. Guthrie* (No. 7098 in my herb.); between Tokai and Steenberg, on the Cape Peninsula, alt. about 40 met., Nov. 27, *C. B. Fair*.

Plate 46. Fig. 1, flower, front view; 2, ditto, back view; 3, odd sepal; 4, petals; 5, side sepals; 6, lip, front view,—the last four being somewhat flattened out artificially; 5, side sepals, side view, natural position; 7, another flower,—all the foregoing magnified 3 diameters; 8, column with lip, viewed obliquely from the front; 9, ditto, from the back; 10, column, (s) one of the two stigmas, (a) anther, (r) rostellum, (g) gland of the pollinia, (L) point of attachment of the lip; 11, one of the pollinia,—all the latter variously magnified.

A glabrous erect robust herb, 15–35 cm. high; stem straight leafy; leaves several strap-shaped acuminate erect-incurved, 6–10 cm. long, the upper gradually smaller, the sheaths almost entirely covering the stem; spike oblong, densely many-fl., bracts ovate-

lanceolate acuminate withered and blackened towards the apex, longer than the flowers; perianth more expanded and more erect than in the rest of the genus; odd sepal oblong, very obtuse; side sepals anticus, joined for nearly their whole length into a single trowel-shaped emarginate piece; petals somewhat square, concave, the outer angles rounded, margin crenulate; limb of the lip linear acute deflexed, appendage widely clawed at the base, then subspathulate and curved forward above, keeled in front; column of two horizontal strap-shaped arms standing edge-wise closely applied to each other and curving forward, the outer one bearing at either extremity a cell of the anther, the inner bearing the rostellum with the gland; stigmas 2, situate in front upon the inner process, one upon either side of the lip at its base near the point of its attachment.

Described from several living plants. Colour of the flowers smoky or ashy-brown, with darker stripes on the petals; limb of the lip pale green, the appendage dark emerald green, anther-cells rosy, rostellum purple. The flowers are about 5 mill. long, and 7 mill. wide. The species is a very distinct one and little resembles any of the other *Corycia*. The hood, composed, as is usual, of the odd sepal and the petals, is not bent down and contracted as is generally the case, but stands nearly erect and somewhat expanded, as in *Pterygodium*. It must be admitted that this similarity of perianth in such species as the present one and *Pt. carnosum* almost breaks down the boundary of the two genera; nor does the column help us much to form a new one, since there are considerable differences of structure amongst the species of each genus. In a general re-arrangement of the genera of Orchideæ both *Corycium* and *Pterygodium* should, perhaps, be united with *Ceratandra*.



TAB. 47.

Tribe OPHRYDEÆ.

Sub-tribe CORYCIEÆ.

Genus CORYCIUM.

Corycium bicolorum, Swartz, in *Köngl. Vetensk. Acad. Nya Handl.*, vol. xxi, p. 220 (1800); Lindley, in *Bauer's Ill. of Orch. Plts.*, t. 15 (1838); *ib.*, *Gen. & Sp. Orch.* p. 368 (1839).—Herba glabra robusta, 15–38 cm. alta; caulis erectus inferne foliosus; folia 6–8, lineari-lanceolata acuminata nervata interdum undulata, 5–15 cm. longa; spica cylindracea, dense multiflora, 1·8–2·2 cm. diametro, bracteis floribus brevioribus, flores 4 mill. longi; sepala lateralia antica, in laminam ovato-rotundatam emarginatam patentem connata; sepalum impar lineari-oblongum obtusum; petala oblique semi-sacciformia falcate acuta; labelli limbus parvus obovatus emarginatus in carinam appendicis sessile, appendix carnea antice carinata sursum in processum subcucullatum obtusum basi auriculatum dilatata; antheræ loculi antici erecti; stigmata 2, in apices pulvinuli hippocrepiformis insidentia. (*Ex exempl. plur. viv. exsiccatisque*). *Ophrys bicolor*, Thunberg, *Prodr. Plant. Cap.*, p. 2 (1794). *C. bicolor*, Thunberg, *Flor. Cap.*, p. 21 (1823).

Hab: South-western Region; CAPE COLONY: mountain slopes and plains of the Cape Peninsula, fl. Oct.–Nov., not common, *Bolus*, 2856; near Tulbagh, alt. 340 met., Nov., *ib.*, 5282; Wellington, *Miss Cummings*; Ceres; Riversdale district, *Burchell*, 6605!; Vette River, near Riversdale, alt. 90 met., Nov., *Schlechter*, 1978!; Riet-Kuil, *Zeyher*, 3952!

Plate 47. Fig. 1, flower, front view; 2, ditto, the side sepal pulled down; 3, ditto, side view; 4, one of the petals,—all the foregoing magnified 6 diameters; 5, column with lip, anterior view; 6, ditto, posterior view; 7, ditto, side view; 8, part of column enlarged, showing side view, the anterior part to the left (the curved dotted line indicates the back part of the appendage of the lip); 9, transverse section through the column, at a point below the junction of the lip and appendage; 10, 11, pollinia.—In the foregoing figures A shows the appendage of the lip; L, the lip; *a*, the anther-cells; *g*, the gland of the pollinia; *r*, the rostellum; *s*, the stigma.

A glabrous, often robust, herb, 15–38 cm. high; stem erect, leafy below; leaves 6–8, linear-lanceolate acuminate nerved,

sometimes waved, 5-15 cm. long; spike cylindrical densely many-fl., 1·8-2·2 cm. in diameter, bracts shorter than the flowers, flowers about 4 mill. long; side sepals anticous, connate into an ovate-rotundate emarginate spreading piece; odd sepal linear-oblong obtuse; petals obliquely semi-sack-shaped, falcately acute; limb of the lip small obovate emarginate, sessile on the keel of the appendage, appendage fleshy, rising free from the column on a straight erect keel, then dilated above ovate in outline and somewhat cowl-shaped, convex above, obtuse and eared at base; cells of the anther anticous erect; stigmas 2, situate in front on each side on the apices of a horse-shoe-shaped cushion.

Described from numerous living and dried specimens. Colour of the flowers clear sulphur-yellow. Resembles *C. orobanchoides* and *C. excisum*, but is usually taller and more slender than either, with smaller flowers, and a different lip. The figure quoted from Bauer's rare book of beautiful drawings was clearly drawn from dried specimens, and is, in some respects, misleading. Ker's figure in the Journ. Sci. R. Inst. Lond. vol. vi, t. 1, f. 1, quoted by Lindley for this species, belongs to *C. crispum*, Swartz.



TAB. 48.

Tribe OPHRYDEÆ.

Sub-tribe CORYCIEÆ.

Genus PTERYGODIUM.

Pterygodium platypetalum, *Lindley*, Gen. & Sp. Orch., p. 366 (1838).—Herba erecta gracilis glabra, 5–15 cm. alta; caulis sæpius flexuosus paucifoliosus; folia 1–2, inferum lineari-lanceolatum acuminatum, 2·5–4 cm. longum, superum minus; flores 1–2, dissiti, circa 1·2 cm. longi, 1·8 cm. lati; bracteæ ovatæ acuminatæ, floribus fere æquilongæ; sepalum impar lanceolatum acuminatum concavum vel basin versus fere saccatum; sepala lateralía concava patentia; petala fere semi-orbicularia, margine superiori biloba, inferiori rotundata valde concava; labelli limbus sellæformis apice angustatus acutus, appendice carnosa in duos lobos erectos auriculæformes apice columnæ producta, deinde subito postice retroflexa in processum subulatum acutum utroque latere argute canaliculatum; rostellí brachia horizontalia; stigmata 2; ovarium obovatum trigonum. (*Ex exempll. plur. viv.*) "*Pt. catholicum* var. *minor*" sheet *a* in herb. Thunberg; *Arethusa alaris*, Thunberg, *Prodr. Plant. Cap.* p. 3 (1794).

Hab: South-western Region; CAPE COLONY: mountains of the Cape Peninsula, rocky places, alt. 550 met., fl. Sept., *Dr. Marloth*; Du Toits' Kloof, also near the Paarl, below 160 met., Sept.–Oct., *Drège*, 8280; near Caledon, on the Zwarteberg Mt., Sept., *Zeyher*, 39441, *Bolus*; near Wellington, fl. Aug., *Miss M. E. Cummings* (No. 16 in the herb. of the Huguenot Seminary there).

Plate 48. Fig. 1, flower, front view; 2, one of the petals; 3, odd sepal,—all the foregoing magnified 2 diameters; 4, column with lip, the anterior part to the right; 5, section through the appendage, at the point marked (more highly magnified than in fig. 4); 6, column with lip; 7, ditto from behind; 8, ditto, the appendage cut away to show stigma, &c.; 9, one of the pollinia,—all the latter variously magnified; 10, ovary, magnified 2 diameters. The letter *a*, indicates the anther; *g*, the gland; *r*, the rostellum; *s*, the stigma.

A slender delicate pale-coloured glabrous herb, 5–15 cm. high; stem thin, usually flexuous, distantly 1–2-leaved; lower leaf linear-lanceolate acuminate, 2·5–4 cm. long, the upper smaller; flowers 1–2, distant, about 1·2 cm. long, 1·8 cm. wide; bracts

ovate acuminate nearly as long as the flowers; odd sepal lanceolate acuminate concave or almost saccate towards the base; side sepals ovate concave spreading; petals nearly semi-orbicular, the upper margin bilobed, rounded below, very concave, limb of the lip saddle-shaped with distinct hanging flaps and a narrowed point, appendage fleshy, produced into two large erect ear-like lobes at the top of the column, thence suddenly bent backward and downward behind the column into a somewhat subulate curved ridged acute piece;* arms of the rostellum horizontal; stigmas 2; ovary obovate trigonous.

Described from several living and dried specimens. Colour of the flowers pale sulphur-yellow; stem and leaves very pale. A delicate and very distinct species, not easily to be mistaken for any other, although Thunberg marked it as a variety "minor" of *P. catholicum* in his herbarium, to which in the general structure of its lip it is undoubtedly allied. Mr. N. E. Brown, who saw and examined the orchids of Thunberg's herbarium, has noted that the specimens were "1-, 2- and 3-flowered." I have gathered about a hundred specimens of which by far the greater part were 1-fl., a few 2-fl., but I have never seen any with more than 2 flowers.

* By an error in the *Orchids of the Cape Peninsula*, p. 184, the descriptions of the lip and the appendage were transposed, thus causing confusion.



H. Bolus del.

F. Huth, Lith. Edin.

PTERYGODIUM VENOSUM, LINDLEY.

TAB. 49.

Tribe OPHRYDEÆ.

Sub-tribe CORYCIEÆ.

Genus PTERYGODIUM.

Pterygodium venosum, *Lindley, Gen. & Sp. Orch.*, p. 367 (1839); *Harvey, Thes. Cap.*, vol. i, p. 59, t. 94 (1859).—Tubera plura cylindrica lanuginosa; caulis erectus spithamæus vel minor, dense foliosus; folia infera lanceolata vel obovata, 1–2 cm. longa, superiora longiora (ad 5 cm.) angustiora acuminata; spica cylindrica sursum angustata, dense multiflora, bracteæ lineares acuminatæ floribus paullo breviores; flores circa 1 cm. longi et lati; sepala lateralia late ovata vel suborbicularia emarginata, valde concava, patentia; sepalum impar angustius obtusum; petala flabelliformi-cuneata incurva patentia, margine superiori eroso-denticulata, quam sepalis paullo latiora; labellum suborbiculare concavum crenulatum, basin versus tuberculo subulato ornatum, appendix erecta carnosa bipartita, segmentis cornuiformibus obtusis curvis; columna biloba; antheræ loculi in margine exteriori utriusque lobi auriculæformis positi, erecti, glandulis pollinium superioribus; stigmata 2; ovarium cylindricum. (*Ex exempl. 2 vivis.*)

Hab: South-western Region; CAPE COLONY: “on the Winterhoek, Tulbagh, at 3000 ft., *Dr. Pappé*, Nov.”; on mountain slopes near Villiersdorp, alt. 600 met., fl. Nov., *Bolus*, 5281; near Palmiet R., on the main road to Caledon, Nov., *ib.*; near Tulbagh Waterfall, mountain sides, alt. 400–450 met., fl. Oct. (with *Pt. rubiginosum*, *Sonder*), *F. Guthrie*.

Plate 49. Figs. 1, 2, flowers; 3, one of the petals; 4, column with lip, posterior view,—all the foregoing magnified 3 diameters; 5, lip and appendage; 6, sepals; 7, column, posterior view, the lip removed, the arms somewhat forced outward; 8, column, front view; 9, one of the pollinia,—all the latter variously magnified.

Tubers several, cylindrical, closely woolly; stem erect, 15–22 cm. high, closely leafy; lower leaves obovate or lanceolate, 1–2 cm. long, upper longer (2.5–5 cm.) narrower acuminate; spike cylindrical, densely many-fl., bracts linear acuminate a little shorter than the flowers; flowers about 1 cm. long and wide; side sepals broadly ovate or suborbicular emarginate, very concave, spreading; odd sepal narrower obtuse; petals fan-shaped.

cuneate, incurved spreading, the upper margin irregularly toothed, a little wider than the sepals; lip somewhat orbicular, concave crenulate, bearing a subulate tubercle towards the base, appendage erect fleshy bipartite, the segments flattened horn-like obtuse curved; column bilobed, cells of the anther situate on the exterior margin of either ear-like lobe, erect, glands of the pollinia uppermost, near the summit; stigmas 2; ovary cylindrical.

Description from 2 living and several dried specimens. Colour of the sepals green and dull purple; petals delicate clear rose, sometimes striped; lip pale green at base, the tubercle bright emerald-green, tipped with rosy stripes near the margin; appendage whitish, rosy at base; anther deep red-brown. This is by far the prettiest of all the *Pterygodiums* known to me, though its beauty is on a small scale. It is by no means a common plant, not having been gathered either by Burchell, Drège, Ecklon or Zeyher, and more than one or two plants are never seen at one time. It should be searched for amongst quartz rocks, or in quartzose sand.



H. Bolus del.

F. Huth, Lith^r Edin^r

PTERYGODIUM RUBIGINOSUM, SONDER.

TAB. 50.

Tribe OPHRYDEÆ.

Sub-tribe CORYCIEÆ.

Genus PTERYGODIUM.

Pterygodium rubiginosum, *Sonder, ex Drège, in Linnæa, vol. xx, p. 220 (1847) nomen tantum; Bolus, in Journ. Linn. Soc. (Bot.) vol. xx, p. 486 (1884).*—Herba erecta, 20–27 cm. alta; caulis foliosus subflexuosus; folia 5–7, lineari-lanceolata acuta vel acuminata erecta, 5–6 cm. longa; spica cylindrica multiflora, 8–12 cm. longa, bracteis late ovatis acutis ovario æquilongis; sepala lateralia late ovata acuta concava patentia, 7 mill. longa; sepalum impar lanceolatum acutum, 6 mill. longum; petala subrhomboidea erecta expansa angulis subacutis, margine irregulari, sepalo impari æquilonga multo latiora; labellum triangulari-hastatum acutum subundulatum multinervum, 3–4 mill. longum, appendice erecta carnosa obovata biloba antice excavata labello longior; antheræ loculi subsphærici, glandulas pollinium in sinu marginis superioris ferentes?; ovarium rectum, 9 mill. longum. (*Ex exempl. 3 viv., 2 exsiccatisque, Zeyher, 3946.*)

*Hab: South-western Region; CAPE COLONY: in moist places, Appel's Kraal near the Zondereinde R., Caledon district, alt. between 150 and 300 met., fl. Nov., Zeyher, 3946!; moist mountain slopes, Jonker'shoek, near Stellenbosch, alt. 1250 met., fl. Jan., Dr. Marloth, 1853!; mountains above Tulbagh Waterfall, 400–450 met., Oct. (growing with *Pt. venosum*), F. Guthrie!; on the Cape Peninsula, Constantia Berg, near the summit, at about 960 met., 2 Jan. 1889, A. Bodkin (No. 7048 in my herb.).*

Plate 50. Figs. 1, 2, flowers, magnified 2 diameters; 3, odd sepal; 4, side sepals; 5, petals,—all the latter magnified 3 diameters; 6, column, front view; 7, ditto, back view,—L, lip; *ap*, appendage of the lip; *ac*, one of the cells of the anther; *g*, gland of the pollinia; *r*, rostellum; 8, one of the anther cells; 9, inner face of one side showing *sg*, the sinus for the caudicle and gland of the pollinia; 10, one of the pollinia,—figs. 6–10 variously magnified.

An erect herb, 20–27 cm. high; stem leafy subflexuous; leaves 5–7, linear-lanceolate acute or acuminate erect, 5–6 cm. long; spike cylindrical many-fl., 8–12 cm. long, bracts broadly ovate acute, as long as the ovary; side sepals ovate acute concave

spreading, 7 mill. long; odd sepal lanceolate acute, 6 mill. long; petals subrhomboidal erect expanded, the angles subacute, margins irregularly toothed or lobulate, as long as the odd sepal to which they are attached but much wider; lip triangular-hastate acute, somewhat waved, veined, 3-4 mill. long, appendage erect fleshy obovate bilobulate, hollowed out in front, about one-third longer than the lip; cells of the anther subspherical, bearing the glands of the pollinia in a sinus of the upper margin?; ovary straight, 9 mill. long.

Described from three living, and two dried specimens. Colour of the flowers dull red, the appendage yellow. The species has the habit of *Pt. venosum*, with which it is sometimes found growing, but as may be seen here, it is very distinct from that, or indeed from any other known to me. It seems to be somewhat rare, and hence I have cited in full all the recorded stations; most of the later collectors have only obtained one or two specimens; how many Zeyher distributed I have no means of knowing. This is one of the several species which have been found on the Cape Peninsula since the publication of my monograph on the Orchids of the Cape Peninsula (1888), and hence does not appear there.

ICONES
ORCHIDEARUM AUSTRO-AFRICANARUM
EXTRA-TROPICARUM;
OR,
FIGURES, WITH DESCRIPTIONS,
OF
EXTRA-TROPICAL
SOUTH AFRICAN ORCHIDS.

BY
HARRY BOLUS, F.L.S.

VOL. I.—PART II.

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F. Huth, Lith. Edin.

EULOPHIA CALANTHOIDES, SCHLECHTER.

TAB. 51.

Tribe VANDEAE.

Sub-tribe EULOPHIEAE.

Genus EULOPHIA.

Eulophia calanthoides, *Schlechter, Beibl. zu Engl. Bot. Jahrbüch.*, No. 50, Band xx, p. 1 (1895).—Glabra erecta, 1–2-pedalis; folia 5–7, conferta ensiformia acuta, prominenter nervosa complicata erecto-recurva, 15–40 cm. longa; scapus erectus, vaginis membranaceis acutis laxe vestitus, racemo laxe 15–20 fl., bracteis lanceolatis membranaceis flore multo brevioribus; flores patentes inter majores; sepala aequalia lineari-lanceolata acuminatissima patentia, 2·5–3·3 cm. longa; petala sepalis subaequilonga 2–3plo latiora oblongo-lanceolata acuta venosa, horizontaliter deflexa; labellum sepalis subaequilongum oblongum vel ellipticum, plus minus obscure 3-lobum, lobis lateralibus abbreviatis vel saepe ad crenulas reductis, intermedio multo majore obtuse acuto, infra medium sacculo brevi obtuso intus hirtulo, calcare gracili incurvo, 4–7 mill. longo; columna brevis, labello 5–8ties brevior. (*Ex exemplari unico vivo pluribusque exsicc.*)

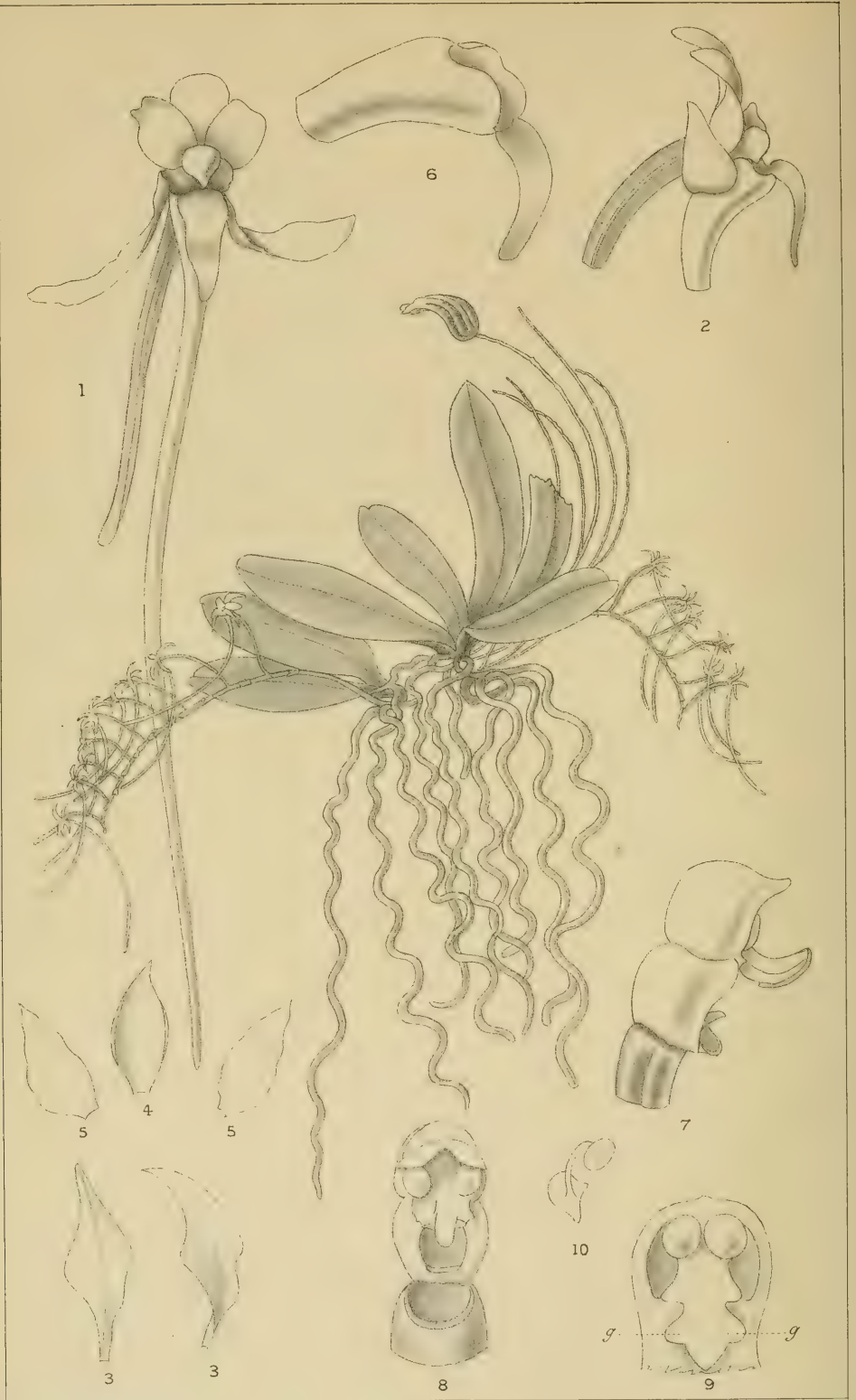
Hab: South-eastern Region; CAPE COLONY: Pondoland, near Fort William, alt. 770 met., fl. Jan., *Tyson*, No. 2844!—NATAL: near Estcourt, fl. Dec., *Wood*, Nos. 3428! 3419! (also, fide *Schlechter*, 4626); station not stated, *Allison*!—ORANGE FREE STATE: *Cooper*, No. 3613!

Plate 51. The figure of the scape and leaves to the right shows the whole plant reduced to about one-fourth of the natural size; that in the centre the raceme of the natural size.—Fig. 1, one of the sepals; 2, one of the petals,—nat. size; 3, lip, somewhat flattened out; 4, ditto, natural position; 5, ditto, side view,—the three latter figures magnified about 2 diameters; 6, column; 7, pollinarium,—the last two variously magnified.

Glabrous erect, 1–2 feet high; leaves 5–7, crowded at the base, sword-shaped acute prominently nerved complicate erect-recurved, 15–40 cm. long; scape erect laxly clothed with membranous acute sheaths, raceme laxly 15–20 fl., bracts membranous much shorter than the flowers; flowers spreading, large; sepals linear-lanceolate much acuminate spreading, 2·5–3·3 cm. long; petals oblong-lanceolate acute veined, horizontally deflexed, about

as long as the sepals and 2-3ce wider; lip as long as the sepals, oblong or elliptical, more or less obscurely 3-lobed, side lobes short obtuse, the sinus sometimes reduced to a mere notch, the middle lobe much larger, narrowed to an obtuse point, furnished below the middle with a shallow obtuse gibbosity hairy within, a few raised but low longitudinal ridges towards the base, spur slender incurved, 4-7 mill. long; column short, 5-8 times shorter than the lip.

Described, and the figure drawn, from a living plant which flowered in the Royal Gardens, Kew, June 21st, 1893, sent by Mr. Allison from Natal; with this I have collated the dried specimens named above. Colour of the sepals green, petals and lip yellow, or sometimes white (*Tyson*), the latter with several purple stripes at base and a pale green centre. The species is very distinct by its saccate or gibbous lip, though the shape of this organ varies, being in some specimens almost exactly oblong. The wild specimens have mostly smaller flowers than those shown in the figure. The manner in which the petals are bent down resembles that of *E. Dregeana*, *Lindley*. Mr. Schlechter's description was founded on dried specimens of Wood's No. 4626, which I have not seen. But he has seen my figure and recognised its identity with his type.



H. Bolus del.

F. Huth, Lith. Edinb.

ANGRAECUM FLANAGANI, *BOLUS*.

TAB. 52.

Tribe VANDEAE.

Sub-tribe SARCANTHEAE.

Genus ANGRAECUM.

Angraecum Flanaganii, *n. sp.*.—Caulis brevis, 3 mill. longus; folia 3-5, oblonga lanceolatave saepius inaequaliter biloba subobtusa coriacea, 1.5-4 cm. longa; racemi plures, 5-10-fl., ad 6 cm. longi, rachide gracillima incurva vix flexuosa, bracteis minutis poculiformibus caducis; sepala lateraliter decurvo-patentia anguste rhomboidea acuminata, circa 4-5 mill. longa, impar brevius ovato-lanceolatum; petala erecto-recurva ovato-lanceolata acuta subundulata, circa 3 mill. longa; labelli limbus deflexus aequilongus subconformis, calcar filiformi incurvo, 2-2.5 cm. longo; columna brevis, anthera majuscula columnam fere aequante; rostellum porrecto-incurvum oblongum lobulis binis pinnatifidum donatum, apice ovato subobtusum; glandulae dissitae, stipitibus discretis filiformibus; capsula elliptica compressa costata, 1.3 cm. longa. (*Ex exempl. plur. viv.*)

Hab: South-eastern Region; CAPE COLONY: near Komgha on trees in woods, alt. 615 meters, fl. Jan., *H. G. Flanagan*, No. 1027!

Plate 52. Fig. 1, flower, front view; 2, ditto, the spur of the lip partly removed; 3, side sepals; 4, odd sepal; 5, petals; 6, lip, part of the spur removed; 7, column, side view; 8, ditto, front view; 9, upper part of column enlarged to show the rostellum, and *g.g.* the position of the glands of the pollinia; 10, one of the pollinia after removal,—all variously magnified.

Stem short, 3 mill. long; leaves 3-5, oblong or lanceolate, usually unequally bilobed at the apex, subobtuse leathery, 1.5-4 cm. long; racemes several, 5-10-flowered, up to 6 cm. long, the rachis very slender curved sometimes flexuous, bracts minute cup-shaped caducous; side sepals decurved-spreading narrow-rhomboid acuminate, 4-5 mill. long; odd sepal shorter ovate-lanceolate; petals erect-recurved broadly lanceolate acute subundulate, about 3 mill. long; limb of the lip about as long and similar in shape, deflexed, spur filiform curved 2-2.5 cm. long; column short, anther large nearly equalling the remaining part of the column; rostellum projecting forward and curved,

oblong with 2 lobules pinnately disposed on each side, apex ovate subobtuse; glands separate with distinct filiform stalks; capsule elliptical compressed ribbed, 1.3 cm. long.

Described from several living specimens, received from Mr. Flanagan, Jan. 13th, 1894. Colour of the flowers very pale greenish yellow, leaves dark green. With the general appearance of *Mystacidium gracile*, Harvey (see Plate 56), this elegant little species is well distinguished by its lip and rostellum.



H. Bolus del.

F. H. Bolus del.

ANGRAECUM TRIDENTATUM, HARVEY.

TAB. 53.

Tribe VANDEAE.
Sub-tribe SARCANTHEAE.
Genus ANGRAECUM.

Angraecum tridentatum, *Harvey, Thes. Cap., vol. ii, p. 6* (1863), subt. 108.—Caulis ramosus striatus, 10 cm. longus vel ultra, 3 mill. crassus, ramulis cylindricis flexuosis pendulis laxe foliatis; folia patentia semicylindrica, superne medio depressa, linea unica percursa, acuta curva, 2-3 mill. crassa, 5-10 cm. longa; flores parvi axillares, pedunculis saepius 2-3-fl., 2-4 mill. longis; sepala lateralalia patentia ovato-lanceolata acuta basi subcordata, impar ovatum acutum, omnia circa 3 mill. longa; petala paullo breviora cuneata acuta apicem versus unidentata vel integra; labellum patens sepalis aequilongum, circumscriptione lanceolatum, basi lobulis binis obtusis crassiusculis erecto-incurvis, apice trilobum, lobis lateralibus brevibus subulatis, intermedio multo majore triangulari acuminato, calcare cylindrico recto pendulo, 6-7 mill. longo; columna brevis; rostellum basi late ovatum deinde angustatum truncatum; glandula unica ovata, stipite rhomboideo-obcuneato, polliniis approximatis sphaeroideis. (*Ex exempl. plur. viv. exsiccatisque.*)

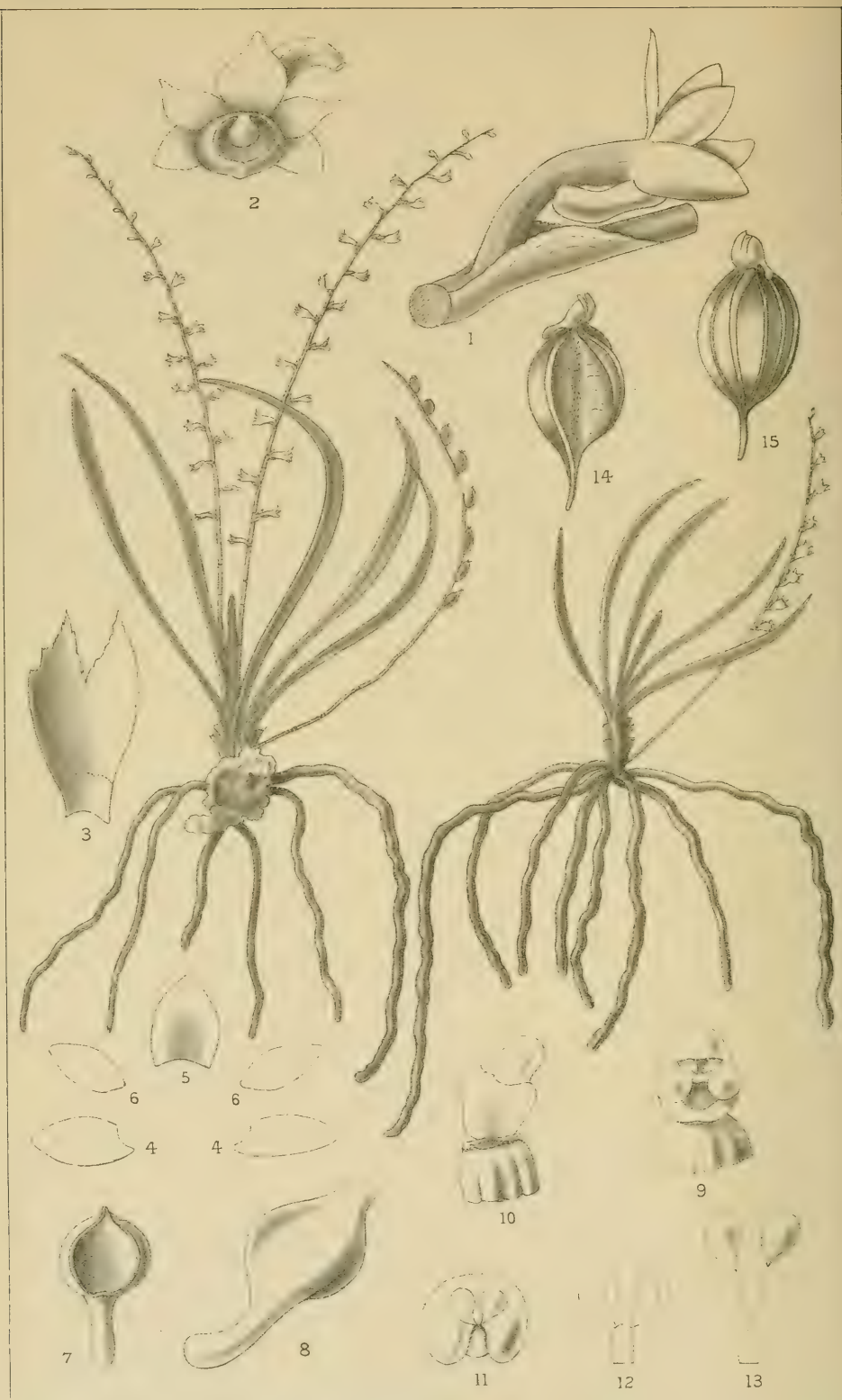
Hab: South-eastern Region; NATAL: in Kranskloof, on jutting rocks, alt. 300 met., fl. Dec.-Jan. (1862), *J. Sanderson*, No. 562! in herb. Trin. Coll. Dublin; Zululand, near Etshowe, collected by R. Maxwell, flowered in greenhouse near Cape Town, Dec. 1893, No. 6319 in my herb.

Plate 53. Fig. 1, flower, front view; 2, ditto, side view; 3, one of the side sepals; 4, odd sepal; 5, one of the petals; 6, column, with lip, front view, the spur partly cut off; 6a, ditto, side view; 7, upper part of column, with anther; 8, apex of the rostellum, detached; 9, 10, pollinarium; 11, section of a leaf,—all variously magnified.

A glabrous epiphytal herb; stem branched striate; branches flexuous pendulous laxly leafy; leaves semicylindrical, depressed on the upper surface and traversed by a single slender line, acute curved or straightish, 2-3 mill. in diameter, 5-10 cm. long; flowers small axillary, on 2-3-fl. peduncles, the latter 2-4 mill. long; side sepals spreading ovate-lanceolate acute subcordate at base,

odd sepal ovate acute, all about 3 mill. long; petals somewhat shorter, cuneate acute, with a small tooth near the apex, or entire; lip spreading, as long as the sepals, lanceolate in outline, with 2 thickish obtuse erect-incurved lobules at base, 3-lobed towards the apex, the side lobes short subulate acute, the middle lobe much larger triangular acuminate, spur cylindrical, nearly straight pendulous, 6-7 mill. long; column short; rostellum broadly ovate at base, thence narrowed to the truncate apex; gland single ovate, with a rhomboid-obcuneate stalk; pollinia approximate spheroidal.

The plant figured is drawn from living specimens received from Zululand, and flowered at Kenilworth near Cape Town. For the description I have also availed myself of the specimens of Sanderson's No. 562, and his drawing from life, preserved in the herbarium of Trinity College, Dublin. These show plants of somewhat stouter growth and shorter leaves than mine, and the drawing represents an apical tooth to the petals which is wanting in mine; otherwise they agree well and are undoubtedly specifically identical. The flowers are cream-coloured or, according to Sanderson, "pale waxy yellow."



H. Bolus del.

F. Roth Lith. Edm.

ANGRAECUM PUSILLUM, LINDLEY.

TAB. 54.

Tribe VANDEAE.
Sub-tribe SARCANTHEAE.
Genus ANGRAECUM.

Angraecum pusillum, *Lindley, in Comp. Bot. Mag. vol. ii, p. 205 (1836).*—Herba epiphytica pusilla acaulis, 3-10 cm. alta; folia linearia basi angustata acuta striata falcato-curva, ad 6 cm. longa; spicae plures erectae laxae multiflorae folia superantes, 7-10 cm. longae, bracteis hyalinis obovatis demum saepius bifidis, lobis acutis laceratis; sepala patentia, 1·5-2 mill. longa, lateralia oblonga, impar latius; petala ovata sepalis paullo breviora; labellum petalis aequilongum suborbiculare concavum obtuse acutum crassum carnosum, calcare recto vel incurvo limbo aequilongo cylindrico apice parum inflato; pollinia obovata, filis mediantibus elasticis ad glandulam unicam affixa; capsula ovoidea costata perianthio diu persistente coronata. (*Ex exempl. plur. viv.*)

Hab: **South-western Region**; CAPE COLONY: Outeniqua near Koratra, fl. Sept.-Oct., *Drège*.—**South-eastern Region**; near Uitenhage, *Mr. West*; near Komgha, in woods, alt. about 600 met., fl. Aug.-Sept., *H. G. Flanagan*, No. 888!

Plate 54. Fig. 1, flower, side view, with bract and part of the rachis; 2, ditto, front view; 3, a bract; 4, side sepals; 5, odd sepal; 6, petals; 7, lip; 8, ditto, viewed from below; 9, column, front view; 10, ditto, side view; 11, summit of column, viewed from above; 12, pollinarium; 13, ditto, the pollinia forcibly drawn out, showing the extensile threads; 14, 15, capsules,—all variously magnified.

A small epiphytical stemless herb, 3-10 cm. high; leaves linear acute narrowed to the base striate falcately curved, 4-6 cm. long; spikes several erect laxly many-fl., longer than the leaves, 7-10 cm. long, bracts hyaline obovate, at length usually bifid with acute lacerate lobes; sepals spreading, 1·5-2 mill. long, the side ones oblong, the odd one broader; petals a little shorter than the sepals, ovate; lip as long as the petals, suborbicular concave obtusely acute thick fleshy; spur straight or curved, as long the limb, cylindrical, somewhat inflated at the apex; pollinia obovate, attached to the single gland by

elastic extensile threads; capsule ovoid ribbed, crowned by the long persistent perianth.

Described and drawn from several living specimens, kindly sent by Mr. Flanagan from Komgha, as above. Colour of the flowers white. A very distinct and elegant little species, of which the flowers, in their structural type, resemble those of *A. sacciferum*, *Lindley* (see Plate 10, above), but which is otherwise very different.



MYSTACIDIUM FILICORNE, LINDLEY.

TAB. 55.

Tribe VANDEAE.

Sub-tribe SARCANTHEAE.

Genus MYSTACIDIUM.

Mystacidium filicorne, *Lindley, in Hook. Comp. Bot. Mag., vol. ii, p. 206 (1836)*; *Harvey, Thes. Cap., vol. ii, p. 48 (t. 175) (1863)*.—Herba epiphytica glabra, breviter caulescens vel saepe acaulescens; radices ad 4 mill. diametro; folia 3-5, disticha lingulata obtusissima, oblique emarginata, coriacea rigida, 3-9 cm. longa; racemi plures, nunc adscendentes nunc penduli laxè multiflori, 6-10 cm. longi, pedunculis saepe flexuosis, bracteis cucullatis caducis; flores secundi vel quaquaversi; perianthii segmenta subæqualia subconformia patentia lanceolata vel lineari-lanceolata acuminata, 8-11 mill. longa, labello basi dente utroque latere donato, calcare basi infundibulari sursum sensim angustato filiformi, saepius arcuato-incurvo pendulo, 3-5.2 cm. longo; columna brevis; clinandrium oblongum obtusissimum; rostellum rostratum porrectum tripartitum, segmentis lateralibus linearibus papilloso-barbatis, intermedio lanceolato nudo subtruncato; pollinia ovoidea, glandulis lanceolatis sub segmentis rostellii lateralibus insertis, pagina inferiore viscida, stipitibus discretis linearibus complanatis. (*Ex exempl. viv. cult. pluribus exsiccatisque*).—*Epidendrum capense*, *Linnaeus fil., Suppl., p. 407 (1781) ?*; *Limodorum longicornu*, *Swartz, in Schrad. Journ. Bot., vol. ii, p. 230 (1799)*; *Eulophia longicornis*, *Spreng. Syst. Veg., vol. iii, p. 720 (1826)*; *Angraecum capense*, *Lindley, Gen. & Sp. Orch., p. 248 (1833)*; *Aeranthus filicornis*, *Reichenbach fil., in Walp. Ann., vol. vi, p. 900 (1861)*.

Hab: South-western Region; CAPE COLONY: forest, Koratru, district George, Sept., *Drège*.—South-eastern Region; near Enon M.S., fl. Dec., *Zeyher*, No. 1118; near Fish R., fl. Jan., and near St. John's R., fl. Febr., *Drège*; near Kei R. mouth, fl. Jan., *H. G. Flanagan*, No. 1254!—NATAL: without station (according to Wood's Catalogue).

Plate 55. Fig. 1, odd sepal; 2, a side sepal; 3, a petal; 4, column with lip spread out, part of the spur cut off; 5, lip, side view; 6, column, front view; 7, ditto, side view; 8, apex of the rostellum viewed from above; 9, ditto viewed from below, the viscid surface of the glands being underneath; 10, pollinia, the stipites curved after removal; 11, section of a stipes.

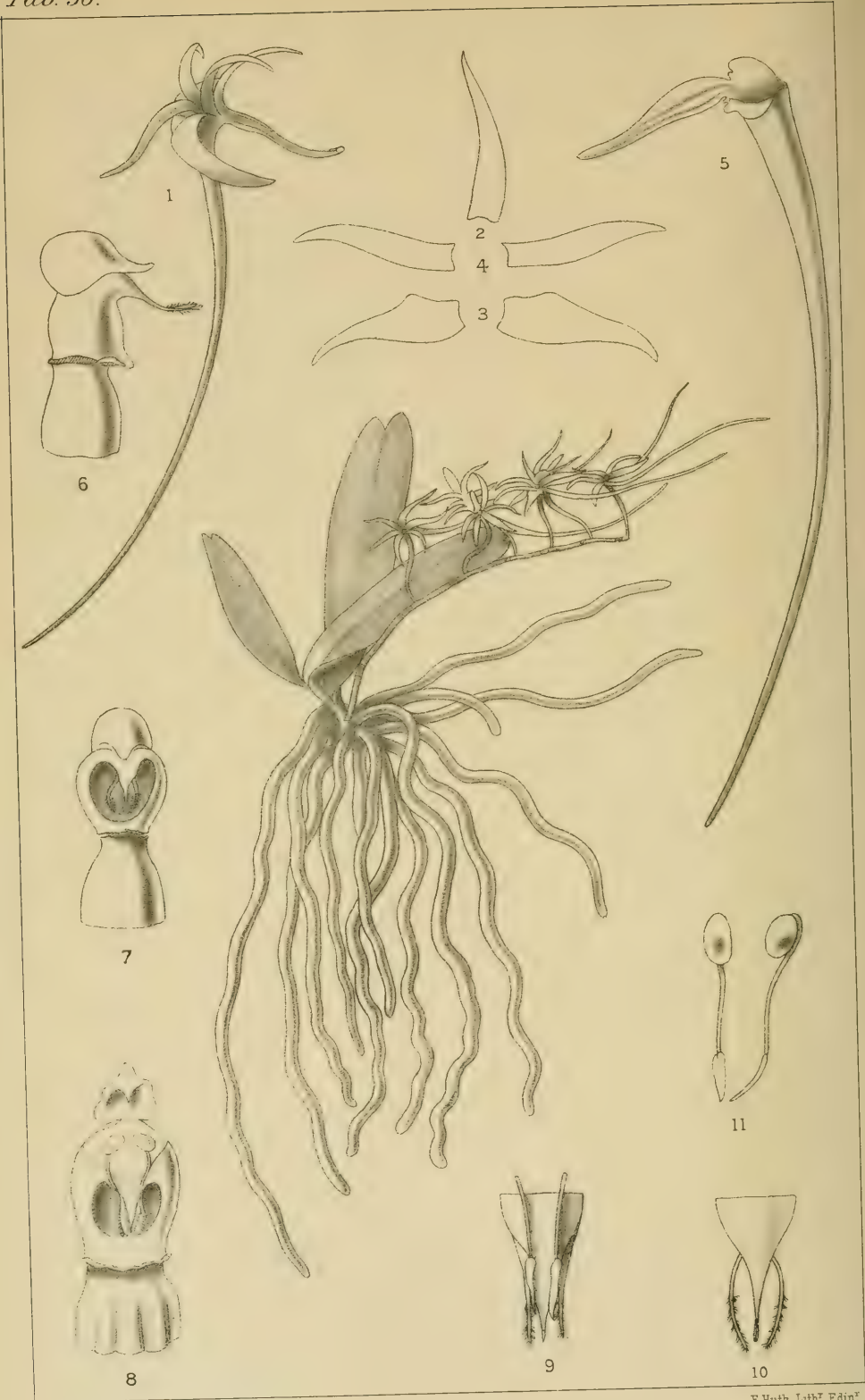
A glabrous epiphytical herb, with very short stem, or stemless; aerial roots 4 mill. in diameter; leaves 3-5, distichous oblong or tongue-shaped, unequally emarginate leathery rigid, 3-9 cm. long; racemes several, ascending or pendulous, laxly many-fl., 6-10 cm. long, peduncles frequently flexuous, bracts hooded caducous, flowers secund or turned every way; segments of the perianth nearly equal in length, similarly shaped spreading lanceolate or linear-lanceolate acuminate, 8-11 mill. long, the

lip furnished at base with a tooth on each side, spur funnel-shaped at base gradually tapering to filiform, pendulous and usually arched or curved, 3-5.2 cm. long; column short; clinandrium oblong, very obtuse; rostellum beaked, projecting forward, 3-partite, lateral segments papillose-bearded, the middle one lanceolate nude subtruncate; pollinia ovoid, glands lanceolate, inserted under the lateral segments of the rostellum, the under surface viscid, with separate linear somewhat flattened stalks.

Described from a living plant which flowered in the Botanic Gardens, Cape Town, Nov. 4, 1884, and from several dried specimens; the figure drawn from the first-named. Colour of the flowers creamy white.

REMARKS UPON THE GENUS *MYSTACIDIUM*, *Lindley*.

Lindley founded the genus *Mystacidium* on this species (in Hook. Comp. Bot. Mag. ii, 206 (1836)) which he had three years earlier published as *Angraecum capense*. He there observes: "With the habit of an *Angraecum* this curious little plant has characters of so marked a kind as to render it impossible to combine it with that genus. The curious two-legged caudicula, each point of which is inserted into the middle of a transparent gland, the naked rostellum, on which the legs of the caudicula are placed without any protection from the anther, and the two very curious bearded appendages that stand forward from the upper angles of the column, are all at variance with the structure of *Angraecum* and its allies." In some remarks under Plate 7 (see Part I. of this work) I expressed the opinion that *Mystacidium* could not be maintained as distinct from *Angraecum*. But reconsideration has led me to think that considerable weight may be attached to the character of the "bearded appendages" which I have treated, I know not whether rightly, as parts of the rostellum. These are peculiar, and perhaps play an important part in the economy of fertilisation. It is probably therefore better to retain *Mystacidium*, but to restrict it to species which exhibit this character. Lindley's "two-legged caudicula," which are in some sort also represented by Harvey in his figures tt. 173, 174, 175 in *Thes. Cap.*, I have failed to find, although I have dissected several flowers. Can they be due to compression or to any other change resulting from drying? Bentham (*Gen. Plant.* iii, 584) characterises the gland as single. In this and the two following species I have always found two distinct glands, which do not even touch one another. Lastly, although Lindley speaks correctly of the "legs of the caudicula" as lying on the rostellum without any protection from the anther, he did not, apparently, see that these pass through the interstices between the segments of the rostellum and are united with the glands which lie completely below, and cannot be seen from above (as shown in figs. 8 and 9 of Plate 55).



H. Bolus del.

F. Huth Lith? Edin?

MYSTACIDIUM GRACILE, HARVEY.

TAB. 56.

Tribe VANDEAE.
Sub-tribe SARCANTHEAE.
Genus MYSTACIDIUM.

Mystacidium gracile, *Harvey, Thes. Cap., vol. ii, p. 48, t. 174* (1863).—Herba epiphytica glabra breviter caulescens; folia 2-4, oblonga apice inaequaliter biloba coriacea erecto-patentia, 2-3.8 cm. longa; racemi plures, laxae 5-8-fl., 4-6 cm. longi, bracteis minutis poculiformibus membranaceis caducis; perianthii segmenta patentia subaequilonga acuta vel acuminata, 7-8 mill. longa; sepala lateralialia lanceolata, impari cum petalis subulatis; labellum basi circa marginem oris calcaris orbiculare 1-2-lobulatum, sursum subito contractum limbo anguste lanceolato, calcare filiformi incurvo, 3-3.5 cm. longo; columna brevis; rostellum rostratum trifidum, segmentis lateralibus linearibus barbatis primum rectis tum polliniis demptis divaricatis, segmento intermedio lanceolato acuminato nudo; glandulae sub apice rostellii approximatae, stipitibus discretis filiformibus; pollinia subsphaeroidea. (*Ex exempll. plur. viv. exsiccatisque.*)

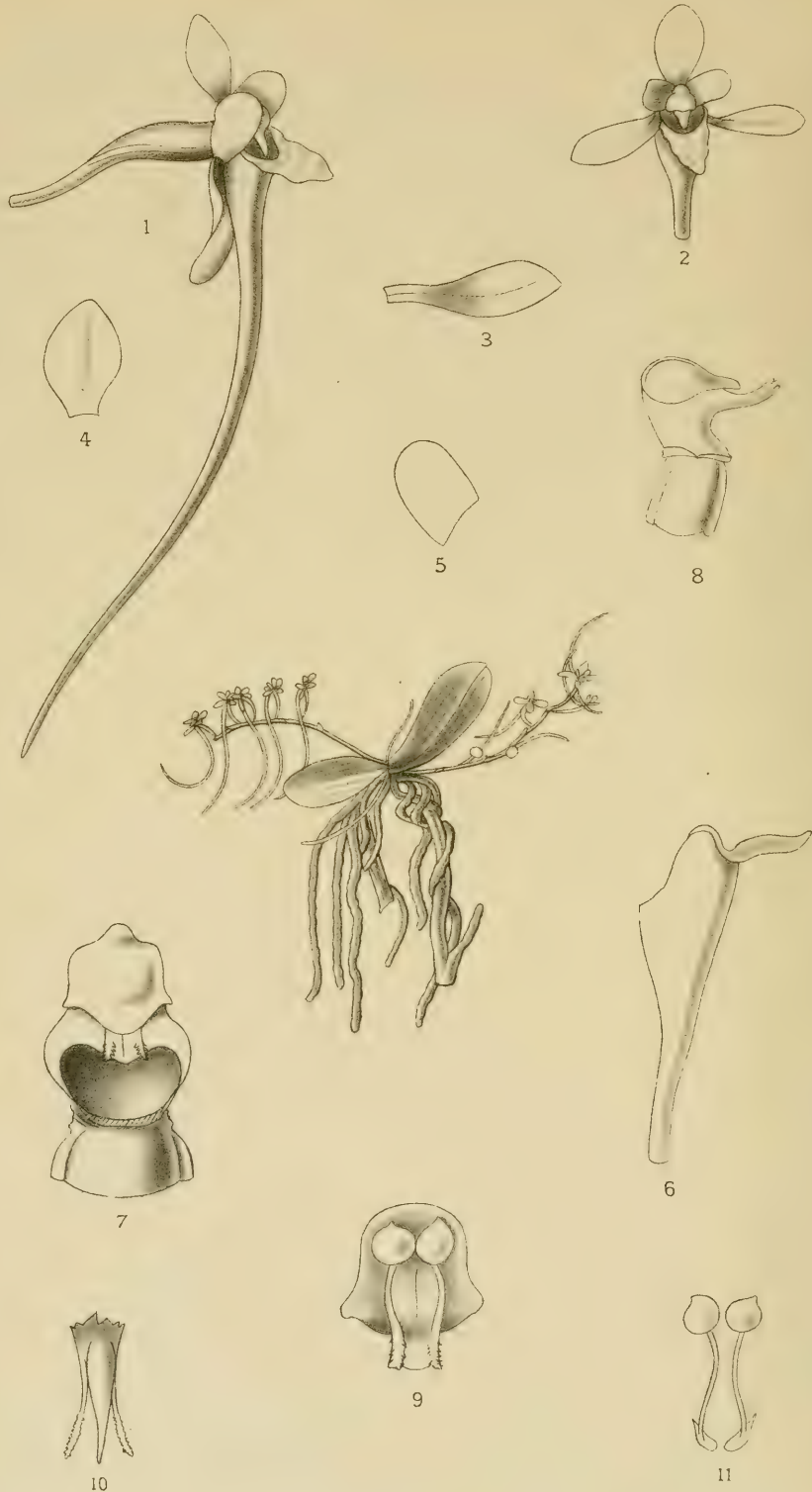
Hab: South-eastern Region; CAPE COLONY: in woods near Komgha, alt. 610 met., fl. May-June, Flanagan, No. 822! Herb. Norm. Austr-Afr., No. 1869; Klaklazele Mt., near Fort Beaufort, Cooper, No. 271, fide Harvey.—NATAL: Dargle Farm, *Mrs. Fannin* Zululand, Etshowe, *Mrs. Saunders.*

Plate 56. Fig. 1, flower; 2, odd sepal; 3, side sepals; 4, petals; 5, lip; 6, column, side view; 7, column, front view, the pollinia removed; 8, ditto, pollinia *in situ*; 9, under side of the apex of the rostellum, showing glands in their position; 10, upper side of ditto after removal of glands,—all variously magnified.

A glabrous epiphytical nearly stemless herb; leaves 2-4, oblong, unequally bilobed at the apex, leathery erect-spreading, 2-3.8 cm. long; racemes several, loosely 5-8-fl., 4-6 cm. long, bracts minute cup-shaped membranous caducous; segments of the perianth spreading, equal in length, acute or acuminate, 7-8 mill. long; side sepals lanceolate, odd sepal and petals subulate; lip orbicular at the base round the wide orifice of the spur with one or two small lobules, thence suddenly contracted

into a narrow lanceolate limb, spur filiform curved, 3-3.5 cm. long; column short; rostellum beaked, projecting forward, trifold, side lobes linear shortly bearded, at first straight becoming divaricate or curved after the removal of the pollinia, the intermediate lobe lanceolate acuminate nude; glands under the rostellum near its apex near together, with separate filiform stalks; pollinia nearly globular.

Described and drawn from living specimens sent by Mr. Flanagan from Komgha, as above. Colour of the flowers white, leaves and aerial roots dull green. This resembles the preceding species, but may usually be distinguished by its smaller size; its flowering season also is widely separated, being in May, whereas *M. filicorne* flowers from Sept. to March. There is also a superficial resemblance to *Angracum Flanaganii* (Plate 52), but the shape of the lip and the structure of the rostellum are quite different.



H. Bolus del.

F. Huth, Lith. Edin.

MYSTACIDIUM PUSILLUM, HARVEY.

TAB. 57.

Tribe VANDEAE.

Sub-tribe SARCANTHEAE.

Genus MYSTACIDIUM.

Mystacidium pusillum, *Harvey, Thes. Cap., vol. ii, p. 47, t. 173* (1863).—Herba epiphytica glabra pusilla acaulescens; radices numerosae, 1–1·5 mill. diametro; folia 2–3, oblonga obtusa vel inaequaliter emarginata coriacea laevia, 1·5–2·7 cm. longa; racemi 2–4, patentes folia superantes, 3–5-fl., rachide gracillima curva, saepe flexuosa, bracteis cucullatis chartaceis; perianthii segmenta patentia, circa 2 mill. longa; sepala lateralía oblanceolata, impar ovato-oblongum, petala oblonga obtusissima, basi nec angustata, sepalis paullo breviora, labelli limbus e basi lata sublanceolatus crispulatus petalis aequilongus, calcare pendulo vel adscendenti basi infundibuliformi sursum angustato filiformi, 1·3–1·7 cm. longo; columna brevis; rostellum porrectum 3-partitum, segmentis lateralibus linearibus barbatis, intermedio oblongo obtuso nudo, glandulis lanceolatis cum stipitibus filiformibus discretis, polliniis sphaeroideis approximatis. (*Ex exempll. plur. viv.*)

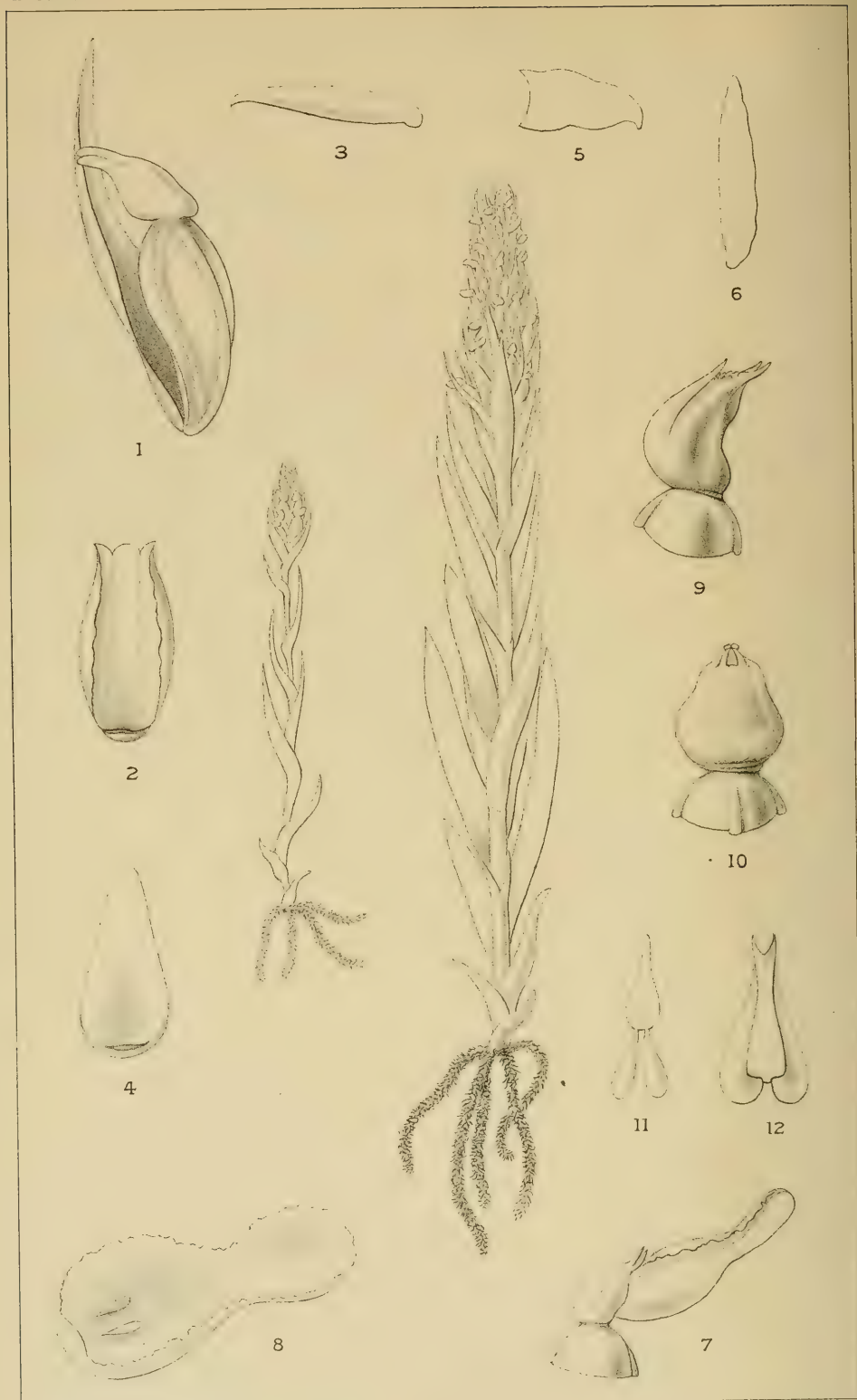
Hab: South-eastern Region; CAPE COLONY: on trees near the mouth of the Kei River, alt. 30 met., fl. June–July, Flanagan, No. 1808!—NATAL: Gerrard.

Plate 57. Fig. 1, flower; 2, ditto, front view, part of spur cut off; 3, a side sepal; 4, the odd sepal; 5, a petal; 6, lip, side view, part of the spur cut off; 7, column, front view; 8, ditto, side view; 9, upper part of column, viewed from above, the lid removed; 10, apex of rostellum, after removal of the pollinia, the margins of the obtuse middle segment having become revolute; 11, pollinia,—all variously magnified.

A small epiphytical glabrous stemless herb; roots 1–1·5 mill. in diameter; leaves 2–3, oblong obtuse or unequally emarginate leathery smooth, 1·5–2·7 cm. long; racemes 2–4, spreading, longer than the leaves, 3–5-fl., the rachis very slender, curved, often flexuose, bracts hooded papery, clothing the internodes of the rachis; segments of the perianth spreading, about 2 mill. long; side sepals oblanceolate subobtuse, the odd one ovate-oblong, petals oblong very obtusely rounded, not narrowed at the base, a little shorter than the sepals, limb of the lip from a broad base

sublanceolate crispulate, as long as the petals, spur pendulous or sometimes ascending, funnel-shaped at base tapering upwards and becoming filiform, 1·3–1·7 cm. long; column short; rostellum projecting forward 3-partite, lateral segments linear bearded, the middle one oblong obtuse nude, glands 2 lanceolate with separate filiform stalks, pollinia spheroidal approximate.

Described from several living specimens sent by Mr. Flanagan from Kei River mouth. Colour of the flowers pale greenish yellow, leaves dark green. This is the smallest of the Cape species of this genus known to me.



H. Bolus del.

F. Huth. Lith. Edinb.

ZEUXINE COCHLEARIS, SCHLECHTER.

TAB. 58.

Tribe NEOTTIEAE.

Sub-tribe SPIRANTHEAE.

Genus ZEUXINE.

Zeuxine cochlearis, *Schlechter*, in *Beibl. zu Engl. Bot. Jahrb.*, No. 50, Band xx, p. 11 (1895).—Herba rhizomate interdum breviter repente, radicibus crassis brunneo-hirtis reliquis glaberrima; caulis erectus teres foliosus basi squamatus, 5–30 cm. altus; folia erecto-patentia lineari-lanceolata acuta, basi amplexicauli-vaginantia, ex sicco reticulato-venosa, internodiis 2–4plo longiora, 2–5 cm. longa; spica oblonga vel anguste ovata dense multiflora, 1.5–2.5 cm. longa, bracteis acuminatis flores superantibus; flores subdepressi, circa 2.5–3 mill. longi; sepala conniventia ovato-lanceolata subobtusata, impari magis concavo basi leviter gibboso; petala semi-ovata, margine exteriori undulato; labellum subcarnosum cochleare, basi ovatum angustatum inflatum, apicem versus paullo dilatatum, marginibus incurvis undulatis irregulariter crenulatis, basi intus callis 2 linearibus parallelis donatum; anthera rotundata; rostellum bipartitum laciniis subulatis acuminatissimis; pollinia pyriformia, stipite ligulato apicem versus dilatato, glandula minima. (*Ex exempl. in spir. vini servatis, pluribusque exsiccat.*)

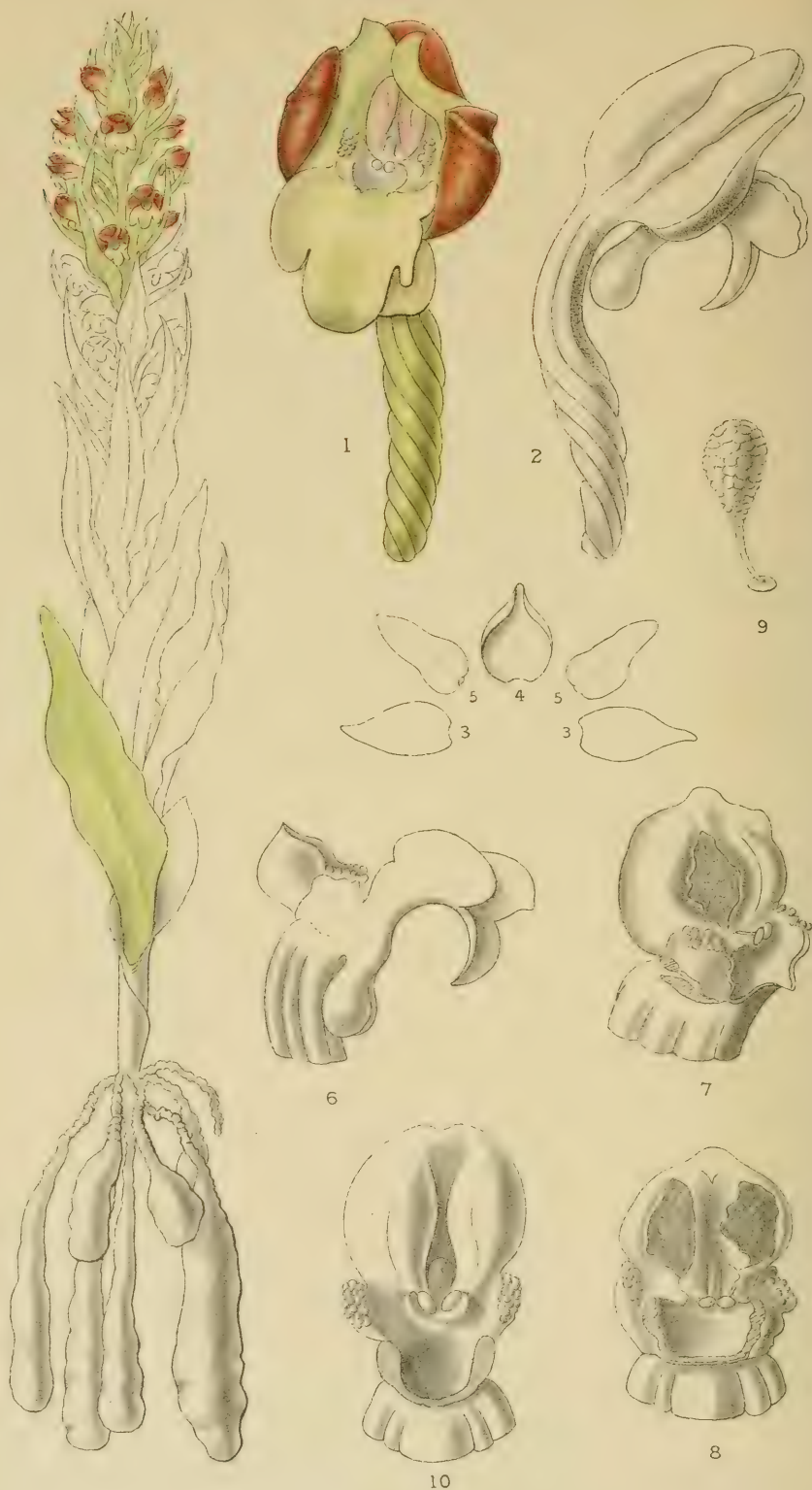
Hab: South-eastern Region; **NATAL:** in marshy sandy places near the sea shore at the mouth of the Umgeni River near Durban, fl. July–August, *R. Schlechter*, No. 3001, according to his description; No. 3002! on ticket with specimens in my herb.; same place, *J. M. Wood*, No. 5321!

Plate 58. Fig. 1, flower, with bract; 2, odd sepal and the adherent petals; 3, odd sepal, side view; 4, ditto, front view; 5, one of the side sepals; 6, one of the petals; 7, lip, with column; 8, lip somewhat expanded forcibly; 9, column, side view; 10, ditto, front view; 11, pollinia with gland, as drawn by Mr. Schlechter; 12, ditto, as seemed to me their probable position,—all variously magnified.

A herb with a sometimes creeping rhizome and thick brown-hairy roots, for the rest quite glabrous; stem erect terete leafy, scaly at base, 5–30 cm. high; leaves erect-spreading linear-lanceolate acute, amplexicaul and sheathing at base, netted-veined when dry, 2–4 times longer than the internodes, 2–5 cm.

long; spike oblong or narrow ovate, densely many-fl., 1·5–2·5 cm. long, bracts acuminate longer than the flowers; flowers somewhat bent downwards, about 2·5–3 mill. long; sepals connivent ovate-lanceolate subobtusate, the odd one more concave and slightly gibbous at the base; petals semi-ovate, the exterior margin undulate; lip somewhat fleshy spoon-shaped inflated at base, rather widened at the apex, margins incurved undulate and irregularly crenulate, furnished at the base within with 2 parallel linear ridges; anther rounded; rostellum bipartite, the segments subulate acuminate; pollinia pear-shaped, stipes strap-shaped dilated towards the apex; gland very small.

Described and drawn from several dried specimens, the flowers from specimens freshly preserved in glycerine and sent by Mr. Wood from Natal. I have also availed myself in part of Mr. Schlechter's description and analytical drawings, kindly placed at my disposal. Colour of sepals and petals white, the lip golden yellow. One of Mr. Schlechter's numerous discoveries, the more interesting as the representative of a genus new to South Africa and only the third species of the tribe Neottieae known within our limits. The author states that it resembles *Z. sulcata*, *Lindley* (from India and China), but in habit only, while its flowers recall those of some *Spiranthes*. Growing with it its discoverer found also a new species of *Disperis*, *D. stenoglossa*, *Schlechter*, nearly allied to *D. Woodii*, *mihi*.



H. Bolus del.

F. Ruth, Lith. Edin.

PLATANTERA MACOWANIANA, SCHLECHTER.

TAB. 59.

Tribe OPHRYDEAE.

Sub-tribe HABENARIEAE.

Genus PLATANThERA.

Platanthera MacOwaniana, *Schlechter, Beibl. zu Engler Bot. Jahrb.*, No. 50, Band xx, p. 12 (1895).—Herba erecta glabra, 10–23 cm. alta; tubera plura cylindrica fasciculata; caulis foliosus subflexuosus; folia 10–12, lineari-lanceolata acuta 1-nerva, saepe undulata, erecto-patentia, 4–6 cm. longa, superiora sensim minora; racemus cylindricus, 2·5–10 cm. longus, multiflorus, bracteis linearibus patentibus, floribus subaequilongis; flores parvi, cum ovariis circa 1 cm. longi; sepala lateralia ovato-lanceolata subacuta, impari latiore; petala lanceolata obliqua, sepalis paullo longiora; labellum cuneato-obovatum crassum carnosum, apicem versus trilobulatum, lobis lateralibus obtusis, intermedio longiore rotundato, calcare inflato pendulo subscrotiformi limbo paullo brevior; columna abbreviata, labello duplo brevior; rostellum brachia brevia porrecta, plica intermedia; stigma magnum excavatum; ovarium cylindricum gracile. (*Ex exempl. plur. viv. exsiccatisque.*)—*Brachycorythis MacOwaniana*, *Reichenbach fil., Otia Bot. Hamb.* p. 104 (1881); *Habenaria MacOwaniana*, *N. E. Brown, in Gard. Chron.*, vol. v, p. 168 (1889); *Gymnadenia MacOwaniana*, *Schlechter, in Verh. Bot. Verein. Brandenb.*, xxxv, p. 46 (1893).

Hab: South-western Region; CAPE COLONY: near Riversdale, slopes of the Langebergen, alt. 300 met., Nov. (1892), *R. Schlechter*, No. 1900!; Knysna district, *Schlechter*.—South-eastern Region; CAPE COLONY: near Grahamstown, in grassy places, alt. 650 met., fl. Nov. (1865), *P. MacOwan*, No. 2627! (in herb. Kew); same place, *W. Tuck*; also *J. Glass*.

Plate 59. Fig. 1, flower, front view; 2, ditto, side view; 3, side sepals; 4, odd sepal; 5, petals; 6, column with lip, side view; 7, 8, column; 9, one of the pollinia; 10, column from another and younger flower,—all variously magnified.

An erect glabrous herb, 10–23 cm. high; tubers several cylindrical clustered; stem leafy subflexuous; leaves 10–12, linear-lanceolate acute or acuminate, 1-nerved, often undulate, erect-spreading, 4–6 cm. long, the upper gradually smaller;

raceme cylindrical, 2·5-10 cm. long, many-flowered, bracts shaped like the leaves, herbaceous, spreading, about equalling or exceeding the flowers; flowers small, including the ovaries, about 1 cm. long; side sepals ovate-lanceolate subacute, the odd sepal wider and more concave, all nearly 4 mill. long; petals lanceolate oblique, a little longer than the sepals; lip cuneate-ovate in outline, thick fleshy, 3-lobed towards the apex, the side lobes obtuse ascending, middle lobe longer rounded deflexed, spur inflated pendulous, shorter than the limb; column half the length of the lip; arms of the rostellum short, projecting, with an intermediate fold; stigma large excavate; ovary cylindrical, slender.

Described from several living and dried specimens; the drawing made from a plant sent from Grahamstown by Mr. Glass. Colour of the sepals dingy red, petals green, lip yellow, sometimes with a central green stripe, anther purple.



TAB. 60.

Tribe OPHRYDEAE.

Sub-tribe HABENARIEAE.

Genus PLATANThERA.

Platanthera virginica, n. sp.—Herba tenera glabra spithamacea vel ultra; caulis erectus vel decumbens gracillimus bifolius; folium inferius radicale patens ovatum acutum saepe undulatum, 2.5–3.5 cm. longum, superius remotum lineare acuminatum multo brevius; racemus laxe 3–6-fl., bracteis lanceolatis ovario subaequilongis; flores suberecti, circa 1 cm. longi; sepala patentia, lateralia oblonga acuta, impari paullo angustiora; petala ovata, basi oblique angustata, incurva, sepalis subduplo breviora; labellum patens basi unguiculatum, ungue concavo-gibboso columnae margine utroque adnato, limbo ovato acuto integro vel interdum utroque margine 1-denticulato, sepalis brevius, circa 4–5 mill. longum; anthera late ovata, pollinia sphaeroidea, glandulis dissitis nudis; stigma majusculum hippocrepiforme depressum, margine ungue labelli, apice excepto, circumdatum; ovarium cylindricum. (*Ex exempl. plur. vir.*)

Hab: ORANGE FREE STATE: sides and summit of the Mont-aux-Sources, alt. from 2450 to 3000 meters, fl. Dec.–Jan., *H. G. Flanagan*, No. 1982! (in herb. Kew, Brit. Mus., Berlin, my own herb., &c.).—**South-eastern Region**; NATAL: Van Reenen's Pass, at 1800 to 2100 met., deflorate in March, *vide Schlechter*.

Plate 60. Fig. 1, flower, front view; 2, ditto, side view; 3, odd sepal; 4, one of the side sepals; 5, a petal; 6, lip, with column, somewhat flattened out, and viewed from above; 7, lip, viewed from below; 8, flower, the sepals removed; 9, lip and column; 10, column, front view; 11, one of the pollinia,—all variously magnified.

A delicate glabrous herb, a span or more in height; stem erect or decumbent, very slender, 2-leaved; lower leaf radical spreading ovate acute frequently undulate, 2.5–3.5 cm. long, the upper remote linear acuminate much shorter; raceme laxly 3–6-fl., bracts lanceolate, about as long as the ovary; flowers suberect, about 1 cm. long; sepals spreading, the lateral oblong acute, the odd one a little wider; petals ovate, obliquely narrowed to the base, incurved, about half as long as the sepals; lip

spreading, clawed at base, the claw concave gibbous adnate to the column, limb ovate acute entire, or sometimes with a small tooth on each side just beyond the middle, shorter than the sepals, about 4-5 mill. long; anther broadly ovate, pollinia spheroidal, with separated naked glands; stigma rather large, horse-shoe-shaped, depressed, margined except at the top by the claw of the lip; ovary cylindrical.

Described from numerous living specimens brought by Mr. Flanagan as above, during an arduous expedition made by him to the summit of the little-explored Mont-aux-Sources, in Jan. 1894. Colour of the sepals pure white, petals pink, lip white with pink edges and a central green nerve; the cavity of the claw green, the outer and under surface of the gibbous base marked by two round green spots. This interesting species is quite distinct in appearance from any other South African Orchid. By the structure of its flower it is allied to *Schizochilus* (see Plate 18 in Part I of this work), which, indeed, is also united by Mr. Schlechter with *Platanthera*, but the appearance is not at all similar.



J. Sanderson del.

F. Ruth, Lith. Edin.

PLATANTHERA TENUIOR, SCHLECHTER.

TAB. 61.

Tribe OPHRYDEAE.
Sub-tribe HABENARIEAE.
Genus PLATANThERA.

Platanthera tenuior, Schlechter, in *Beibl. zu Engl. Bot. Jahrbuch*, No. 50, Bd. xx, p. 12 (1895).—Herba glabra erecta, 15–35 cm. alta; caulis erectus foliosus; folia plura ovato-lanceolata acuta erecta, 2·5–3·5 cm. longa; spica sublaxa 6–15-fl., bracteis foliaceis flores parum superantibus; sepala lateralia oblique lanceolata subfalcata obtusa erecto-patentia, 7 mill. longa; sepalum impar lanceolatum concavum erectum aequilongum; petala erecta oblonga, oblique torta, obtusissima, minute crenulata basin versus dorso columnae adnata, sepalis aequilonga; labellum ovatum obtusissimum, margine decurvo crenulato, sepalis aequilongum, calcare cylindrico obtuso incurvo laminam excedente; columna erecta, antherae loculi paralleli, rostellum plica interjecta, glandulis subapproximatis. (*Ex exempl. plur. exsicc.*) *Brachycorythis tenuior*, Reichenbach fil. in “*Flora*” for 1865, p. 183; *Otia Bot. Hamb.*, p. 104 (1881); *Habenaria tenuior*, N. E. Brown, in *Gard. Chron.*, vol. xxiv, p. 307 (1885).

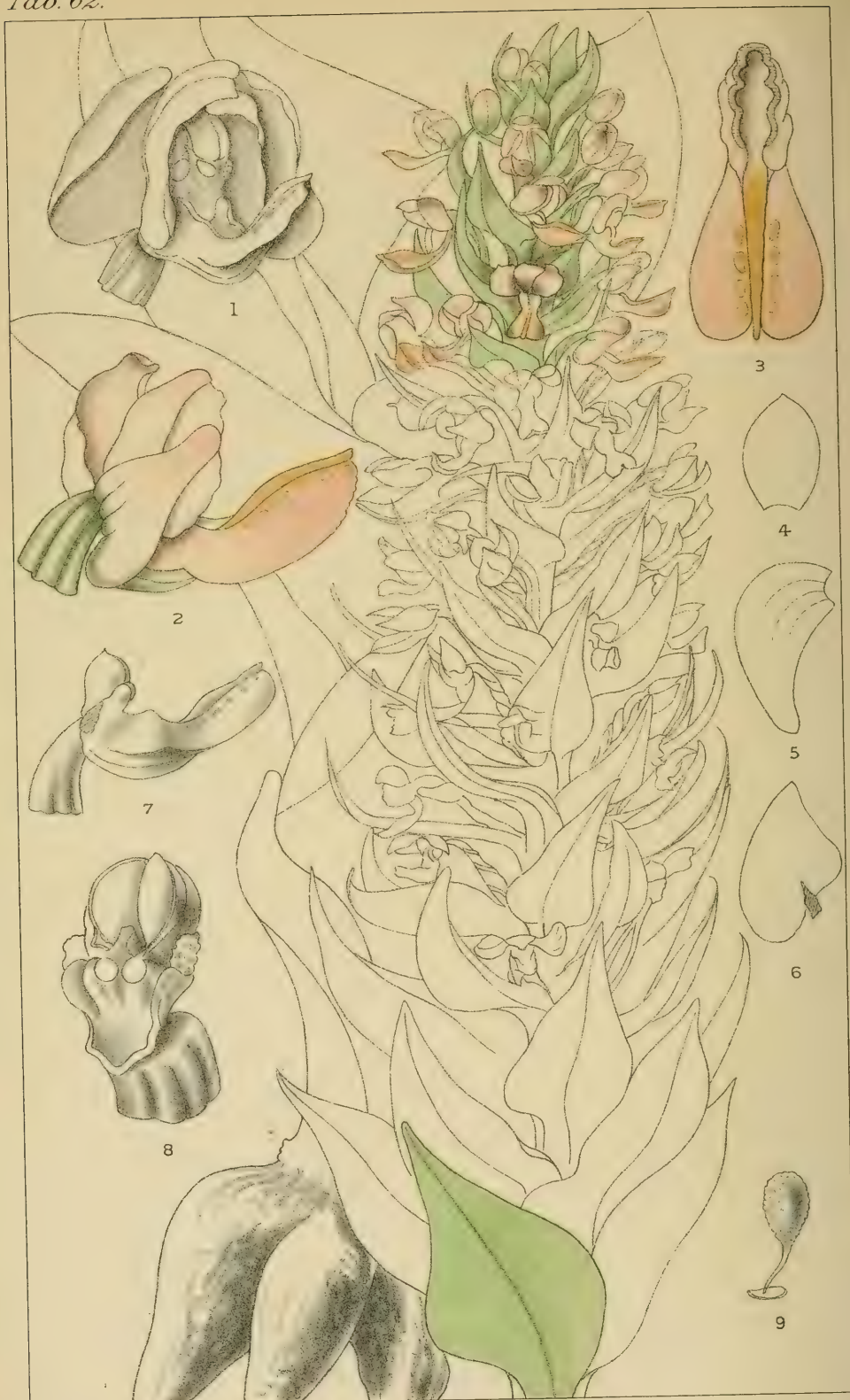
Hab: South-east Region; NATAL: between Maritzburg and Bishopstowe, alt. 600 met., fl. Jan., *J. Sanderson*, No. 1046!; Inanda, Jan., *Wood*, No. 714! TRANS-VAAL REPUBLIC: Strydpoort, Makapansberg, *Rehmann*, No. 5390!

Plate 61. Fig. 1, odd sepal; 2, side sepals; 3, petals; 4, lip, side view; 5, ditto, viewed from above, all the foregoing magnified about 3 diameters; 6, column, with petals, front view; 7, column only,—magn. about 6 diameters.

A glabrous erect herb, 15–35 cm. high; stem erect leafy; leaves several ovate-lanceolate acute erect, 2·5–3·5 cm. long; spike somewhat laxly 6–15-fl., bracts leaflike, but little longer than the flowers; side sepals obliquely lanceolate subfalcate, obtuse erect-spreading; odd sepal erect lanceolate concave; petals erect oblong obliquely twisted, very obtuse, minutely crenulate, adnate to the back of the column near the base; lip ovate very obtuse, margin decurved and crenulate, spur cylindrical obtuse incurved,—all the segments about 7 mill. long;

column erect, cells of the anther parallel with a fold of the rostellum placed between, glands somewhat approximate.

The drawing of the whole plant is a copy of one by the late Mr. Sanderson, of Natal, made from life; the analytical parts and the description are from one of Mr. Wood's dried specimens. General colour of the flowers purplish rose, with darker spots in various places. This species is a South-African representative of the group of East Indian orchids which Sir Joseph Hooker, in the Flora of British India, regards as *Habenariae*, and has called *Phyllostachya*, characterised chiefly by large flowers in the axils of sheathing leaves, by the absence of stigmatic processes, and by a greatly reduced rostellum.



H. Bolus del.

F. Huth, Lith. Edin.

BRACHYCORYTHIS OVATA, LINDLEY.

TAB. 62.

Tribe OPHRYDEAE.

Sub-tribe HABENARIEAE.

Genus BRACHYCORYTHIS.

Brachycorythis ovata, *Lindley, Gen. & Sp. Orch., p. 363 (1838); Harvey, Thes. Cap., vol. i, p. 34, t. 53 (1859).*—Herba robusta glabra, 1-1½-pedalis, tuberibus 3-4-fasciculatis magnis; caulis erectus dense foliosus; folia ovata acuta vel acuminata dense imbricata, 4-10 cm. longa, sensim minora in bracteas foliaceas conformes abeuntia; spica oblonga dense multiflora, bracteis inferioribus flores circa 1-3 cm. longos excedentibus; sepala lateralia adscendentia falcato-ovata subobtusata; sepalum impar erectum ellipticum; petala erecta oblique ovata acuta apicem versus supra columnam incurva; labellum anticum horizontali-porrectum, 1-1.2 cm. longum, ungue magno cymbiformi-gibboso, lamina ampliata subovata, callo lineari majusculo longitudinaliter percursa; anthera fere erecta, tuberculis utroque latere ornata, glandulis pollinium majusculis approximatis; rostellum inter loculos antherae plicatum; stigma depressum marginatum. (*Ex exempl. plur. viv. exsiccatisque.*)—*Platanthera ovata*, *Schlechter, in Beibl. zu Engl. Bot. Jahrb., No. 50, Bd. xx, p. 12 (1895).*

Hab: South-eastern Region; CAPE COLONY: Perie Forest, fl. Jan., *T. R. Sim*, No. 26!; Dohne Mt., alt. 1100 met., Jan., *Bolus*; near Kei R. mouth, alt. 16 met., Nov., *Flanagan*, No. 1300!; Tembuland, in grassy places, Jan., *Bolus*; Pondoland, fl. Febr., *Drège*, and near Umkwani R., alt. 60 met., fl. Oct., *Tyson*, No. 2670!—NATAL: near Inanda, Nov., *Wood*, No. 1169!; Swazieland, near Barberton, 1200 met., *Galpin*, No. 725!—TRANS-VAAL REPUBLIC: Macamac, *Mudd*; near Lydenburg, 1500 met., Dec., *Schlechter*, No. 3922!

Plate 62. Fig. 1, flower, front view; 2, ditto, side view; 3, lip; 4, odd sepal; 5, one of the side sepals; 6, one of the petals; 7, column, with lip, side view; 8, column; 9, one of the pollinia,—all variously magnified.

A stout glabrous herb, 1-1½ feet high, with 3-4 large clustered tubers; stem erect, densely leafy; leaves ovate acute or acuminate densely imbricate, 4-10 cm. long, becoming gradually smaller above and passing into leaflike bracts; spike

oblong densely many-flowered, the lower bracts exceeding the 1·3 cm. long flowers; side sepals ascending falcate-ovate sub-obtuse; odd sepal erect elliptical; petals erect obliquely ovate acute, their upper part arched over the column; lip anticonic horizontally projecting, 1-1·2 cm. long, with a large boat-shaped gibbous claw, the blade somewhat ovate longitudinally traversed by a rather large linear coloured callus; anther nearly erect, furnished at base with a tubercle on either side, glands of the pollinia large approximate; rostellum folded between the cells of the anther; stigmata depressed margined.

Described and drawn from a living specimen sent to me by Mr. Flanagan from the Kei R. mouth; and I have since seen numerous living specimens growing further eastward. Colour of the flowers brilliant purple, with an orange callus and spots upon the lip. A handsome and widely-distributed species, with delightfully fragrant (violet-scented) flowers. The limited size of the plate has obliged me to represent the lower half of the plant behind the upper half, in a manner which is, I fear, somewhat confusing.



H. Bolus del.

F. Ruth, Lith^r Edin^r

BRACHYCORYTHIS TYSONI, Bolus.

TAB. 63.

Tribe OPHRYDEAE.
Sub-tribe HABENARIEAE.
Genus BRACHYCORYTHIS.

Brachycorythis Tysoni, *Bolus*, in *Journ. Linn. Soc. (Bot.)*, vol. xx, p. 485 (1884).—Herba glabra, 1–1½-pedalis, tuberibus testiculatis indivisis; caulis gracilis erectus strictiusculus laxè paucifolius; folia 2–4 subremota erecto-patentia, lanceolata vel oblonga acuta, inferiora 6–12 cm. longa, superiora sensim minora; spica angusta, laxè 5–10-fl., bracteis ovatis acuminatis floribus fere aequilongis; sepala lanceolata acuminata, 7–9 mill. longa, lateralia patentia, impar erecto-deflexum; petala erecta oblonga acuta apice obscure dentata, sepalis paulo breviora, supra columnam incurva; labellum anticum, horizontaliporrectum vel deflexum, sepalis parum longius, ungue cymbiformi lamina fere aequilongo, lamina ampliata suborbiculari obtusa vel cuspidata, minutissime crenulata, medio callo colorato vix elevato longitudinaliter percursa; columna erecta subcylindrica; anthera terminalis ovata, loculis parallelis, tuberculis nullis; rostellum inter loculos antherae plicatum; glandulae pollinium ovatae, in alabastro approximatae, per anthesin sub rostello fere absconditae; stigma in facie columnae positum depressum margine elevato; ovarium subprismaticum, costis prominentibus. (*Ex exempl. plur. viv.*)—*Neobolusia Tysoni*, *Schlechter*, in *Beibl. zu Engl. Bot. Jahrb.*, No. 50, Bd. xx, p. 30 (1895).

Hab: South-eastern Region; CAPE COLONY: Katberg, *MacOwan*, No. 1109!; Kaffraria, *Mrs. Barber*, No. 40!; Xalanga, alt. 1450 met., fl. Jan., also near Maclear and in many places in Tembuland, *Bolus*; near Umtata, *Schlechter*, No. 6343!; in marshy places near Kokstad, alt. 1540 met., fl. Febr., *Tyson*, No. 1083!.—TRANS-VAAL REPUBLIC: near Botsabelo, Dec., *Schlechter*, No. 4062!; Houtbosch Mt., 2000 met., Febr., *Schlechter*, No. 4447!

Plate 63. Fig. 1, flower, side view; 2, ditto, front view; 3, one of the petals; 4, lip; 5, column, with lip, side view; 6, column, front view; 7, pollinia, in the bud or newly-opened flower; 8, one of the pollinia from a more mature flower, with the gland as retracted under the fold of the rostellum; 9, section of the ovary,—all variously magnified.

A glabrous erect herb, 1-1½ feet high; stem slender straightish few-leaved; leaves 2-4, somewhat distant erect-spreading, lanceolate or oblong acute, the lower 6-12 cm. long, the upper gradually smaller; spike narrow, loosely 5-10-fl., bracts ovate acuminate, almost as long as the flowers; sepals lanceolate acuminate, 7-9 mill. long, the side ones spreading, the odd one erect and somewhat bent downward; petals erect oblong acute, obscurely toothed at the apex, a little shorter than the sepals and incurved above the column; lip anticus horizontally projecting or bent downward, somewhat longer than the sepals, the claw boat-shaped nearly as long as the blade, the blade suborbicular obtuse or cuspidate, minutely crenulate, traversed in the middle by a longitudinal coloured scarcely elevated callus; column erect subcylindrical; anther terminal ovate, cells parallel, without tubercles; rostellum folded between the cells of the anther; glands of the pollinia ovate, approximate in the bud, during flowering retracted and almost hidden under the base of the rostellum; stigma in front of the column depressed with a raised margin; ovary somewhat prismatic, with prominent ribs.

Described and drawn from living plants sent by Mr. Sim from the Dohne Mt. I have since seen it growing in many places in Fingoland and Tembuland, and it is clearly a widely-distributed plant, ranging from the Amatola Mts. to the Houtbosch in the northern part of the Trans-Vaal. The colour of the sepals is green with brown tints, petals bright green with translucent dots, lip white with a broad pale purple medial band. Mr. Schlechter regards this species as the type of a new genus, as quoted in the synonymy above. The only divergence from the older species of *Brachycorythis* which I have been able to find is that in the latter (or, at least, in *B. ovata*, see preceding plate) the stigma is depressed or excavate from the general level of the column, while in this species the stigma is raised as a whole above the general level of the column, and the stigmatic surface is then hollowed out. To this may be added that the column is a little longer. Apart from this, the general similarity in the type of the flower, and especially of the lip, to *Brachycorythis* is, I think, somewhat striking.



H Bolus del.

F. Huth, Lith^r Edin^r

HABENARIA CILIOSA, LINDLEY.

TAB. 64.

Tribe OPHRYDEAE.

Sub-tribe HABENARIEAE.

Genus HABENARIA.

Habenaria ciliosa, Lindley, in *Ann. Nat. Hist.*, vol. iv, p. 314 (1840); Kraenzlin, *Monogr. in Engl. Bot. Jahrb.*, Bd. xvi, p. 169 (1892).—Herba erecta, $1\frac{1}{2}$ –2-pedalis; caulis substrictus foliosus; folia 2 inferiora ad vaginas transverse purpureo-fasciatis lamina abbreviata reducta, superiora circa 5 erecto-patentia ligulata acuta minute ciliolata, 5–10 cm. longa; spica cylindrica dense multiflora, bracteis foliaceis lanceolatis acuminatis margine et nerva ciliolatis, flores superantibus; sepala lateralalia semi-ovata subfalcata obtusiuscula, impar ovatum concavum, omnia ciliolata circa 4 mill. longa; petala e basi latiore oblonga obtusissima, sepalis aequilonga; labellum fere tripartitum, laciniis oblongis obtusis, lateralibus patentibus, intermedia parum longiore, calcare pendulo filiformi apice inflato ovario saepius longiore; columna abbreviata rotundata; rostellii brachia caudiculifera incurva adscendentia clinandrio multo breviora, processibus stigmatiferis triangularibus quam brachiis rostellii multo brevioribus. (*Ex exempl. plur. viv.*)

Hab: South-eastern Region; CAPE COLONY: Perie Mt. above the forest, fl. Jan., *T. R. Sim*, No. 18!; Kei R. mouth, in marshy places, alt. 16 meters, Jan., *Flanagan*, No. 645!; between Morley and the Umtata R., Febr., *Drège*; near Clydesdale, alt. 750 met., Febr., *Tyson*, No. 2044!—NATAL: station not given, from Wood's list.

Plate 64. Fig. 1, flower, side view; 2, ditto, front view, the lower part of the spur cut off; 3, side sepals; 4, odd sepal; 5, petals; 6, lip; 7, column with lip, side view; 8, column only, front view; 9, pollinia,—all variously magnified.

An erect herb, $1\frac{1}{2}$ –2 feet high; stem straightish leafy; the two lower leaves reduced to transversely purple-striped sheaths with short free points, the upper about 5, erect-spreading ligulate acute ciliolate, 5–10 cm. long; spike cylindrical densely many-fl., bracts leaflike lanceolate acuminate, ciliolate on the margins and midrib, longer than the flowers; side sepals semi-ovate subfalcate somewhat obtuse, the odd one ovate concave, all ciliolate and about 4 mill. long; petals from a wider base oblong, very

obtuse, as long as the sepals; lip nearly 3-partite, segments oblong obtuse, the lateral ones spreading, the intermediate a little longer, spur pendulous filiform, inflated at the apex, generally longer than the ovary; column short rounded; caudicle-bearing arms of the rostellum incurved ascending, much shorter than the clinandrium; stigmatiferous processes triangular, much shorter than the arms of the rostellum.

Described and drawn from specimens sent by Mr. Sim from the Perie. Colour of the flowers yellowish-green. A species easily recognised by the deeply-striped sheaths at the base of the stem, a character which seems invariable, and by its ciliolate sepals.



H. Bolus del.

F. Huth, Lith. Edin.

HABENARIA TRIDENS, LINDLEY.

TAB. 65.

Tribe OPHRYDEAE.
Sub-tribe HABENARIEAE.
Genus HABENARIA.

Habenaria tridens, *Lindley, in Comp. Bot. Mag., vol. ii, p. 208 (1836)*; *Kraenzlin, Monogr. in Engl. Bot. Jahrb., Bd. xvi, p. 66 (1892)*. —Herba glabra erecta, $\frac{1}{2}$ –2-pedalis; caulis gracilis debilis foliosus; folia 4–7, lineari-lanceolata vel lanceolato-ovata acuminata reticulato-venosa laxe adscendentia, ad 15 cm. longa; racemus laxe multiflorus (ad 30 fl.), bracteis lanceolatis ovarii dimidio subaequilongis; sepala lateralialia semi-ovata obtusa deflexa, circa 5 mill. longa; sepalum impar erectum paullo brevius ovatum fornicatum obtusissimum marginatum; petala bipartita, partitione postica falcato-oblonga, sepalo impari agglutinata, antica deflexa falcato-lineari longiore aequilonga vel brevior; labellum profunde trilobum fere tripartitum, 6 mill. longum, lobis linearibus deflexis, lateralibus acutis, intermedio latiore obtuso subcarinoso, calcare pendulo cylindrico limbo duplo longiore ovario aequilongo; clinandrium obtusissimum retusum, loculis antherae bene remotis, rostellum brachiis caudiculiferis adscendenti-porrectis, processibus stigmatiferis paullo deflexis subaequilongis, clinandrio duplo brevioribus. (*Ex exempl. unico vivo, pluribusque exsiccatis.*)—*H. Gerardi, Reichenbach fil., Otia Bot. Hamb., p. 97 (1881)*.

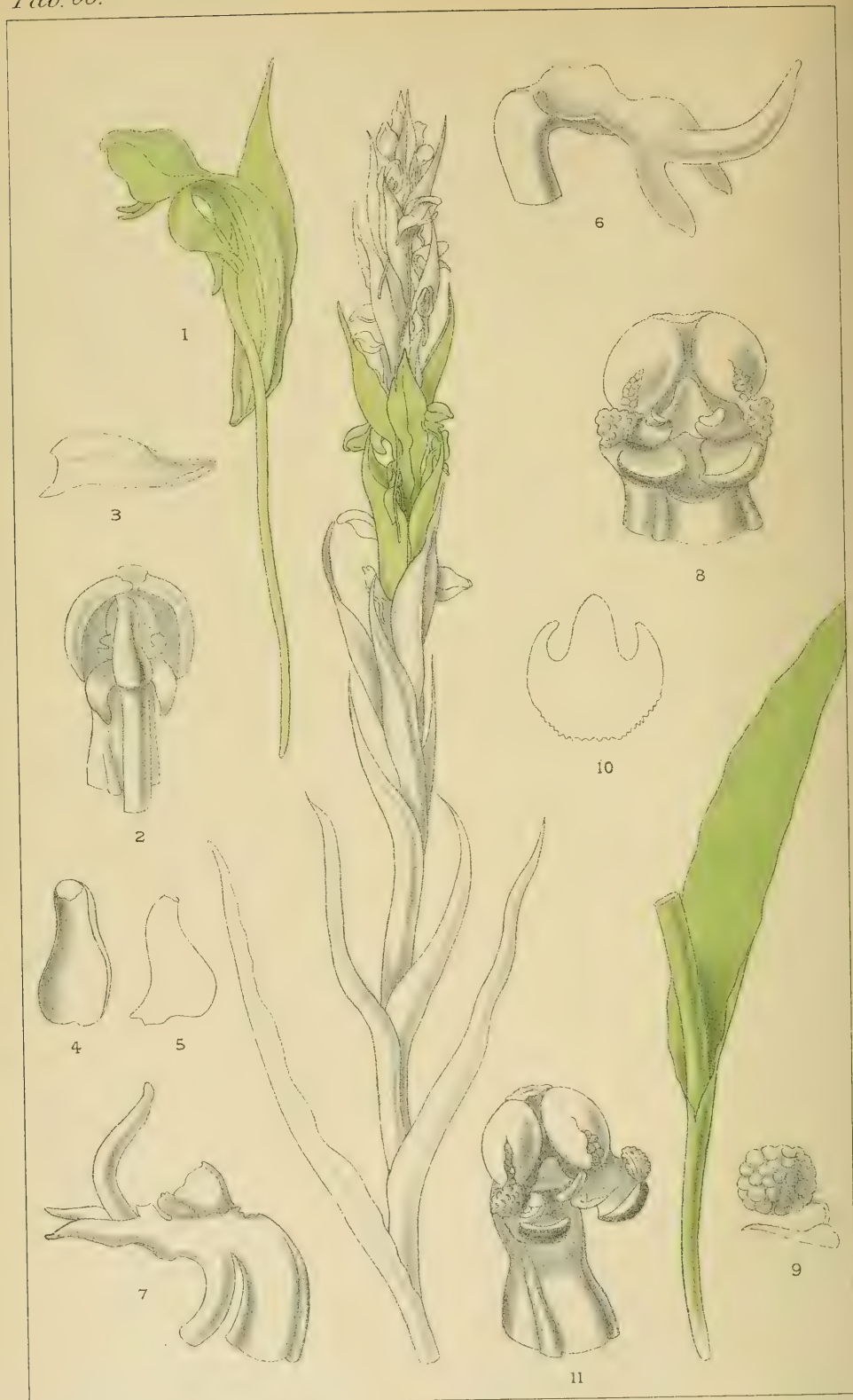
Hab: **South-eastern Region**; CAPE COLONY: Perie Forest, near the Mission Station, fl. Jan., *T. R. Sim*, No. 13!; Gwenkala stream near Komgha, alt. 550 met., fl. March, *Flanagan*, No. 520!; Malowe Forest, near Clydesdale, alt. 1450 met., March, *Tyson*, No. 2043!—NATAL: woods, Polela, 1200–1550 met., April, *J. M. Wood*, No. 4586!—TRANS-VAAL REPUBLIC: near Barberton, 910 met., March, *Culver*, No. 47!; woods, Houtbosch Mt., 1850 met., Febr., *Schlechter*, No. 4470!

Plate 65. Fig. 1, flower with bract; 2, ditto, side view,—magnified about 3 diameters; 3, one of the side sepals; 4, odd sepal; 5, petals in different positions; 6, lip, with section across the middle lobe; 7, column, side view; 8, ditto, front view,—all the latter variously magnified.

A glabrous erect herb, $\frac{1}{2}$ –2 feet high; stem slender weak leafy; leaves 4–7, linear lanceolate or lanceolate-ovate acuminate netted-veined, laxly ascending, from 6 to 15 cm. long; raceme

loosely many-fl. (up to 30 fl.); bracts lanceolate, about half as long as the ovary; side sepals semi-ovate obtuse deflexed, about 5 mill. long; odd sepal erect, a little shorter, ovate vaulted very obtuse margined; petals bipartite, the hinder segment falcate-oblong agglutinated to the odd sepal, front segment deflexed falcate-linear, longer than, equally long, or shorter than the hinder segment; lip deeply 3-lobed, nearly 3-partite, 6 mill. long, segments linear deflexed, the lateral ones acute, the middle wider obtuse somewhat fleshy, spur pendulous cylindrical, about as long as the ovary; clinandrium very obtuse retuse, cells of the anther rather distant, caudicle-bearing arms of the rostellum ascending and pushed forward, stigmatiferous processes about as long and somewhat deflexed, half as long as the clinandrium.

Described from one living and several dried specimens. The figure drawn from a plant sent by Mr. Flanagan. Flowers green. Allied to *H. arenaria*, Lindley, but well distinguished by its more numerous and different leaves, blunt sepals and bipartite petals; also resembles *H. malacophylla*, Reichb. f., but in that species the leaves always turn black in drying. The relative length of the anterior and posterior segments of the petals is in this, as in several other species, very variable. Reichenbach's *H. Gerrardi* only differs by the anterior being shorter, Lindley describes it as longer, while the plant from which our drawing was taken exhibits them as nearly equal.



H. Bolus del.

F. Huth, Lith. Edin.

HABENARIA LAEVIGATA, LINDLEY.

TAB. 66.

Tribe OPHRYDEAE.
Sub-tribe HABENARIEAE.
Genus HABENARIA.

Habenaria laevigata, Lindley, in *Ann. Nat. Hist.*, vol. iv, p. 315 (1840); Kraenzlin, *Monogr. in Engl. Bot. Jahrb.*, Bd. xvi, p. 171 (1892).—Herba glabra erecta, $\frac{3}{4}$ – $1\frac{1}{2}$ pedalis; caulis strictus foliosus; folia 4–5, subremota erecta linearia vel lanceolata acuminata, 5–10 cm. longa, in bracteas abeuntia; spica cylindrica multiflora, bracteis foliaceis ovatis acuminatis carinatis flores superantibus; sepala lateraliter deflexa lanceolata acuminata; sepalum impar ovato-oblongum fornicatum, 6–7 mill. longum; petala indivisa, oblique ovata, sepalum impari agglutinata; labellum patens trilobum subcarnosum, lobis lateralibus deflexis linearibus, intermedio adscendenti latiore longioreque, calcare filiformi gracillimo pendulo ovarium longe excedente (2.5–3 cm. longo); clinandrium obtusissimum, antherae loculis subdivaricatis; rostellum triuspidatum, brachiis caudiculiferis brevissimis; processus stigmatiferi perbreves obtusissimi incurvi. (*Ex exempll. plur. viv. exsiccatisque.*)—*H. ornithopoda*, Reichenbach fil., in *Linnaea*, vol. xx, p. 696 (1847).

Hab: South-western Region; CAPE COLONY: Ruytersbosch, district of George, Mund and Maire (about 1827).—South-eastern Region; CAPE COLONY: near Grahamstown, Febr., Miss White; near the same, alt. about 700 meters, Febr., J. Glass; Perie, above the forest, Jan., T. R. Sim, No. 20!; Tembuland and Maclear district in various places, Bolus; grassy sides of Mt. Currie, near Kokstad, 1800 met., Febr., Tyson, No. 1075!; Tsitsa River, Schlechter, No. 6367!—ORANGE FREE STATE: Bester's Vallei, Harrismith district, 1650 met., Jan., Bolus.—TRANS-VAAL REPUBLIC: near Bergendal, Dec., Schlechter, No. 4012!; Houtbosch Mt., Febr., ib.

Plate 66. Fig. 1, flower, with bract; 2, ditto, front view, the ovary and the spur of the lip partly cut off; 3, one of the side sepals; 4, odd sepal; 5, one of the petals; 6, lip, side view, the spur cut off; 7, column with lip, side view; 8, column only, front view; 9, one of the pollinia; 10, the rostellum detached and flattened out; 11, column from another flower,—all variously magnified.

A glabrous erect herb, $\frac{3}{4}$ – $1\frac{1}{2}$ ft. high; stem straight leafy; leaves 4–5, subdistant erect linear-lanceolate acuminate, 5–10 cm.

long, passing into bracts; spikes cylindrical many-fl., bracts leaflike ovate acuminate keeled, exceeding the flowers; side sepals deflexed lanceolate acuminate; odd sepal ovate-oblong vaulted, 6-7 mill. long; petals undivided, obliquely ovate, adhering to the odd sepal; lip spreading 3-lobed somewhat fleshy, side lobes linear deflexed, the middle lobe ascending, wider and longer, spur filiform slender pendulous, much longer than the ovary (2.5-3 cm. long); clinandrium very obtuse; anther-cells somewhat divaricate; rostellum tricuspidate, the caudicle-bearing arms very short; stigmatiferous processes very short very obtuse incurved.

Described from several living and dried specimens; the drawing made from a plant sent by Dr. Schoenland from Grahamstown. Colour of the flowers green, the odd sepal and lip darker. A distinct species with the habit of a *Disa* of the *Monadenia* section. The long thin spur is very characteristic.



H. Bolus del.

F. Huth, Lith. Edin.

HABENARIA ANGUICEPS, BOLUS.

TAB. 67.

Tribe OPHRYDEAE.

Sub-tribe HABENARIEAE.

Genus HABENARIA.

Habenaria anguiceps, *Bolus*, in *Journ. Linn. Soc. (Bot.)*, vol. xxv, p. 164 (1889); *Kraenzlin*, *Monogr. in Engl. Bot. Jahrb.*, Bd. xvi, p. 216 (1892).—Herba glabra erecta, 12–40 cm. alta; caulis strictus foliosus; folia lanceolata acuminata 1-nerva imbricantia, 2–6 cm. longa, sensim in bracteas abeuntia; spica cylindrica saepius dense multiflora, 2–2.5 cm. diametro, floribus subsquarrosis, bracteis lanceolatis inferioribus flores superantibus, superioribus brevioribus; sepala lateralia lanceolata acuta reflexa, 6 mill. longa; sepalum impar ovatum cucullatum aequilongum; petala indivisa, oblique lanceolata acuta, sepalo impari agglutinata; labellum indivisum lineare obtusum carnosulum, basi paullo ampliatus, marginibus revolutis, 6 mill. longum, calcare obtuso inflato limbo subaequilongo; clinandrium erectum obtusissimum, rostellum brachiis caudiculiferis brevibus incurvis, processibus stigmatiferis subulatis rostellum brachiis brevioribus. (*Ex exempl. plur. viv. exsiccatisque.*)

Hab: South-eastern Region; CAPE COLONY: in clayey soil near Grahamstown, alt. 675 meters, fl. Jan., *Bolus*, No. 7312; near same place, fl. Feb., *J. Glass*!; near Van Staden's River, *Jos. Mackie*!—TRANS-VAAL REPUBLIC: near Bergendal, alt. 1900 met., fl. Dec., *Schlechter*, No. 4010!

Plate 67. Fig. 1, flower; 2, odd sepal; 3, side sepals; 4, petals; 5, lip; 6, ditto, side view; 7, column, side view; 8, one of the pollinia,—all variously magnified.

A glabrous erect herb, 12–40 cm. high; stem straight leafy; leaves lanceolate acuminate 1-nerved imbricate, 2–6 cm. long, passing into bracts; spike cylindrical usually densely many-fl., 2–2.5 cm. in diameter, flowers somewhat squarrose, bracts lanceolate the lower exceeding, the upper slightly shorter than the flowers; side sepals lanceolate acute reflexed, 6 mill. long; odd sepal ovate somewhat hooded, of the same length; petals undivided obliquely lanceolate acute, adhering to the odd sepal; lip undivided linear obtuse rather fleshy, widened at the base,

margins revolute, 6 mill. long, spur obtuse inflated about as long as the limb; clinandrium erect very obtuse, caudicle-bearing arms of the rostellum short incurved, longer than the subulate stigmatiferous processes.

Described and drawn from several living specimens, for which I am indebted to Mr. J. Glass, and which were much finer than those from which my first description of the species was drawn up. Colour of the flowers green. The leaves are occasionally somewhat glaucous. The species is peculiar by its short flowers, resembling those of *H. laevigata*, *Lindley* (see preceding plate), to which it is most nearly allied, but with a different lip and column. The narrowing of the odd sepal and petals to a point is a marked characteristic. The distribution is peculiar; no doubt further research will result in its being found between Grahamstown and the Trans Vaal.



H. Bolus del.

F. Huth, Lith^r Edin^r.

SATYRIUM OUTENIQUENSE, SCHLECHTER.

TAB. 68.

Tribe OPHRYDEAE.

Sub-tribe DISEAE.

Genus SATYRIUM.

Satyrrium outeniquense, *Schlechter*, in *Engler's Botanische Jahrbücher*, *ined.*—Herba erecta glabra, 10–20 cm. alta; caulis substrictus paucifolius; folia ovata acuta, infimum solo appressum, 3–4 cm. longum, superiora sensim minora in bracteas erectas lanceolatas acutas internodiis brevioribus abeuntia; racemus abbreviatus, laxe 5–10-fl., bracteis lanceolatis reflexis, floribus parum brevioribus; sepala oblonga obtusa aequilonga, lateralibus subfalcatis, circa 5 mill. longa; petala oblonga obtusissima, margine crenulato, sepalis paullo breviora; labellum tubuloso-galeatum, apice libero erecto margine crenulato, calcaribus filiformibus ovario duplo longioribus; columna abbreviata; rostellum porrectum subtriangulare crassiusculum glandulis majusculis pone apicem utroque latere positis; lobus stigmatiferus subquadratus pulvinatus rostello subaequilongus. (*Ex exempll. plur. viv.*)

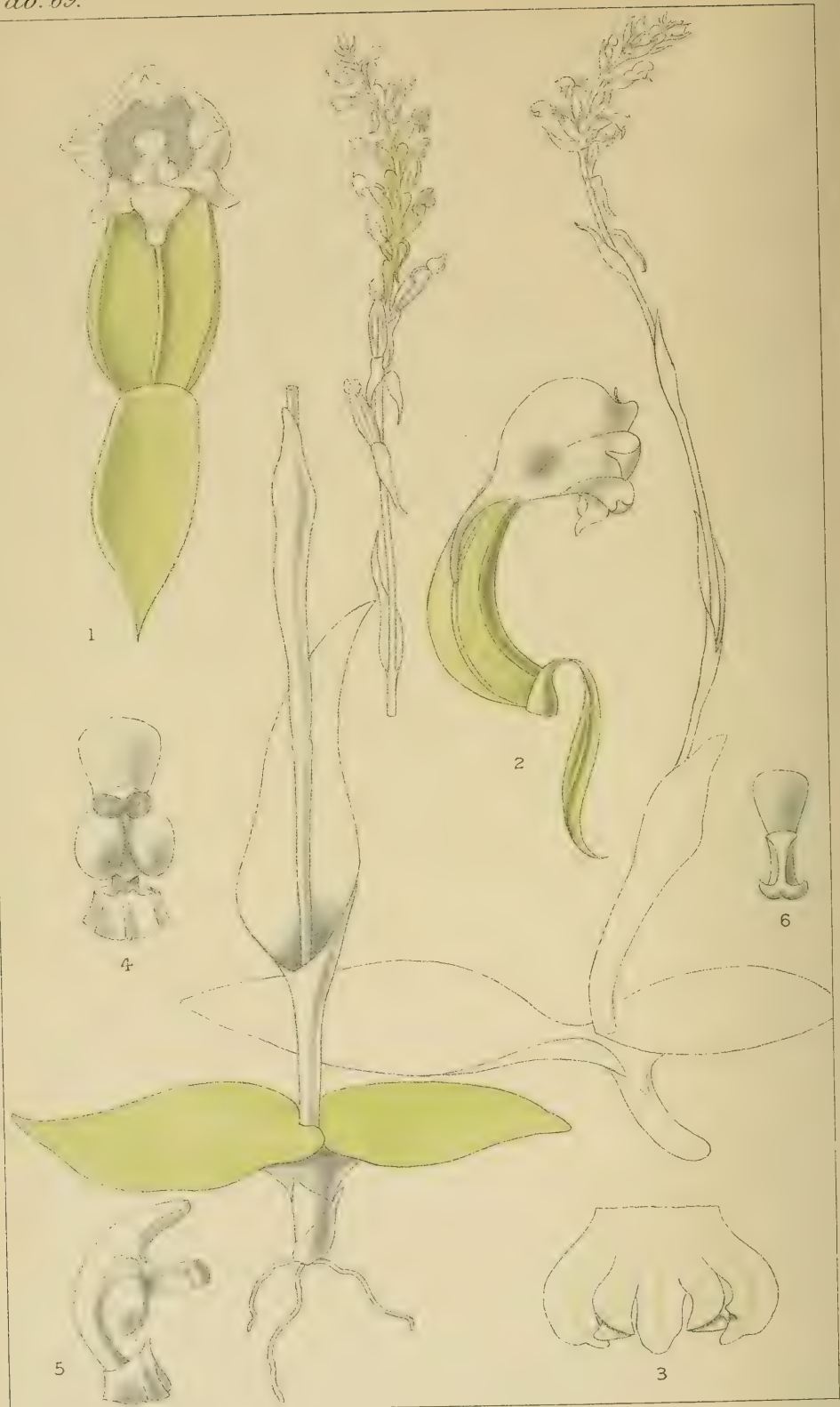
Hab: South-western Region; CAPE COLONY: grassy places in Montagu Pass, distr. George, alt. 600 meters, fl. Oct.–Nov., *Schlechter*, No. 5792!

Plate 68. Fig. 1, 2, flower, front and side view; 3, sepals and petals; 4, column, side view; 5, ditto, front view; 6, section of the ovary,—all variously magnified.

An erect glabrous herb, 10–20 cm. high; stem straightish few-leaved; leaves ovate acute, the lowest appressed to the soil, 3–4 cm. long, the upper gradually smaller passing into erect lanceolate acute bracts shorter than the internodes; raceme short, loosely 5–10-fl., bracts lanceolate reflexed, scarcely shorter than the flowers; sepals oblong obtuse, all of equal length, the lateral ones subfalcate, about 5 mill. long; petals oblong very obtuse, margin crenulate, a little shorter than the sepals; lip tubular-galeate, with a free erect apex, margin crenulate, spurs filiform twice as long as the ovary; column short; rostellum projecting, subtriangular, rather thick, glands large placed on either side

behind the apex; stigmatiferous lobe nearly square, cushioned, about as long as the rostellum.

Described and drawn from several living specimens sent to me by Mr. Schlechter from the station above named. Colour of the flowers yellow, with three faint green veins on each segment. In its floral characters this comes nearest to *S. ochroleucum*, *mili* (figured in *Orch. Cape Penins.*, t. 26), which I fear may be only a form of *S. humile*, *Lindley*. But the leaves are differently arranged, and it is still more diverse in the shape of the rostellum and the position of the glands. It is also allied to *S. stenopetalum*, *Lindley*.



H. Bolus del.

F. Huth, Lith^r Edin^r

SATYRIUM RUPESTRE, SCHLECHTER.

TAB. 69.

Tribe OPHRYDEAE.

Sub-tribe DISEAE.

Genus SATYRIUM.

Satyrium rupestre, *Schlechter*, in *Engler's Botanische Jahrbücher*, *ined.*—Herba glabra erecta, spithamæa vel ultra; caulis gracilis rectus vel flexuosus pauci-vaginatus; folia 2 infera laxè patentia vel adscendentia (nec solo appressa) ovato-lanceolata acuta, 6–8 cm. longa, tertium erectum basi laxè vaginatum, reliquis ad vaginas foliaceas reductis, internodiis brevioribus; spica gracilis laxè multiflora (9–15-fl.), bracteis reflexis oblongis acuminatis floribus subaequilongis; sepala oblonga obtuse acuta, lateralibus falcatis, 2–3 mill. longa; petala subconformia aequilonga, apicem versus saepe inflexa; labellum subsphaeroideum galeatum, apice libero acuto, calcaribus filiformibus pendulis limbo fere aequilongis, ovario duplo brevioribus; rostellum lineare medio attenuatum, apice ampliatum incrassatum subbilobum; glandulae pone apicem insidentes; lobus stigmatiferus obcuneatus, rostello paullo longior. (*Ex exempl. plur. viv.*)

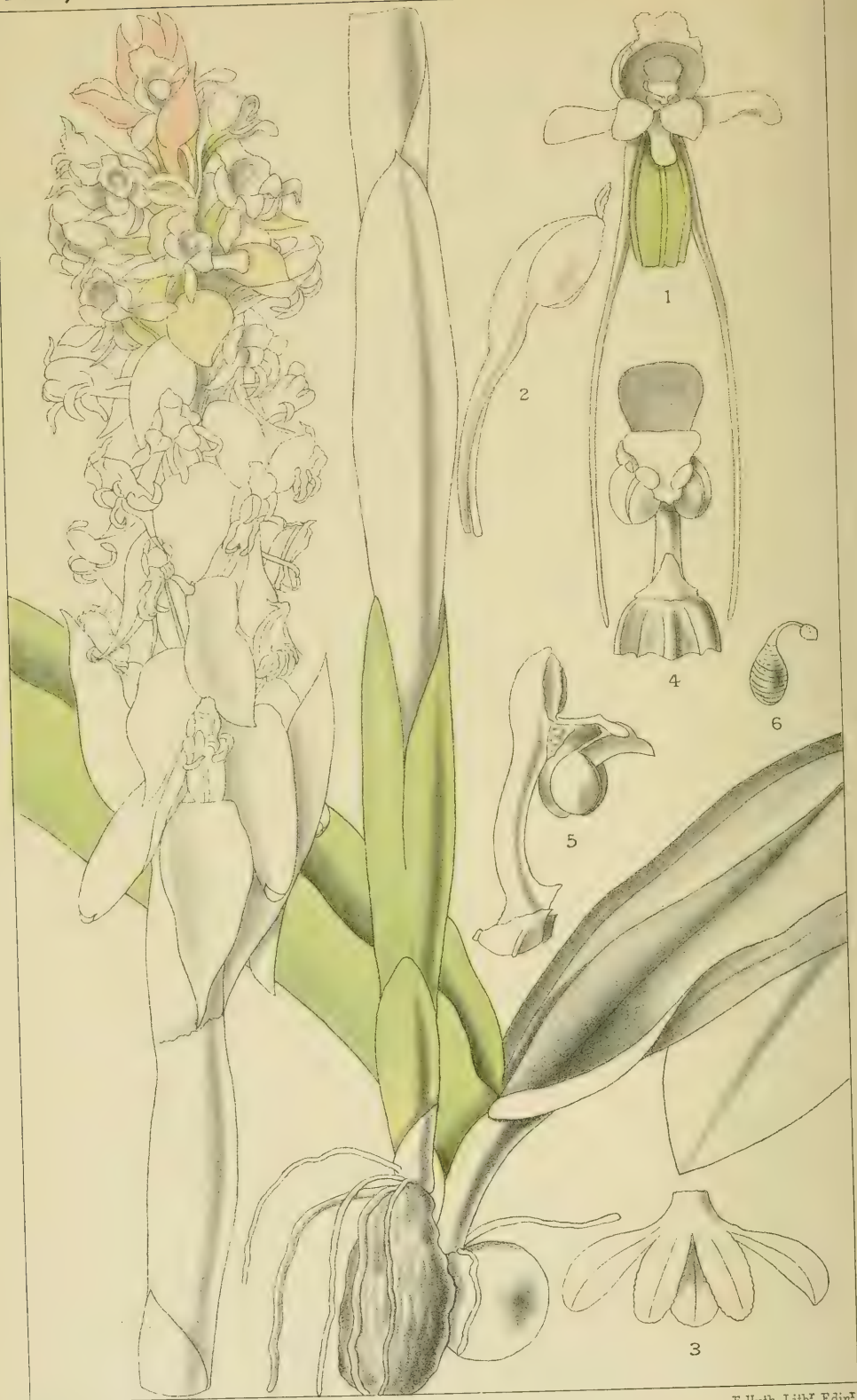
Hab: South-western Region; CAPE COLONY: rocky places near Silver R., distr. Knysna, alt. 120 met., fl. Nov., *Schlechter*, No. 5870!; near Storm's R., distr. Humansdorp, 60 met., *ib*, No. 5980!

Plate 69. Fig. 1, 2, flower, front and side view; 3, sepals and petals, somewhat spread out; 4, column, front view; 5, ditto, side view; 6, the upper portion of the column, the rostellum pulled down to show its form,—all variously magnified.

A glabrous erect herb, a span or more high; stem slender straight or flexuous, distantly sheathed; lower leaves 2 loosely spreading or ascending (not appressed to the soil) ovate-lanceolate acute, 6–8 cm. long, third leaf erect loosely sheathing at base, the rest reduced to leaf-like sheaths shorter than the internodes; spike slender loosely many-fl. (9–15-fl.), bracts reflexed oblong acuminate about equalling the flowers; sepals oblong obtusely acute, the side ones falcate, 2–3 mill. long; petals similarly shaped and as long, often inflexed near the apex; lip somewhat globular and galeate, the free apex acute, spurs filiform pendulous

about as long as the limb and half as long as the ovary; rostellum linear, attenuated in the middle, wider thickened and somewhat bilobed at the apex; glands placed behind the apex: stigmatiferous lobe obtuse, a little longer than the rostellum.

Described and drawn from living specimens received from Mr. Schlechter from the station first above named in Nov. 1894. Colour of the flowers white with pale green central lines on the segments. A species well distinguished in the spurred group by its very small flowers and peculiar rostellum. From *S. retusum*, Lindley, which also has small flowers, it may readily be known by its two lower leaves, laxer and longer spike, and the free apex of the galea.



H. Bolus del.

F. Hath, Lithr Edinr

SATYRIUM LONGICAUDA, LINDLEY.

TAB. 70.

Tribe OPHRYDEAE.

Sub-tribe DISEAE.

Genus SATYRIUM.

Satyrrium longicauda, *Linlley, Gen. & Sp. Orch. p. 337 (1838).*—Herba glabra erecta, 1-1½-pedalis; scapus e tubere hornotino strictus aphyllus, vaginis herbaceis scapum arcte cingentibus vestitus; folia radicalia 2-3, e tubere annotino, adscendentia lanceolata acuta saepius 7-nerva, 5-15 cm. longa; spica cylindrica vel oblonga dense multiflora, circa 3 cm. diametro, bracteis lanceolatis reflexis, interdum minute ciliolatis, inferioribus flores longe superantibus; sepala petalaeque patentia oblonga obtusa, basi connata, circa 8 mill. longa, sepalis trinervis, petalis 5-nervis; labellum oblongo-galeatum, margine inflexo, apice libero obtusissimo emarginato crispato barbato, dorso eecarinato vel interdum brevissime carinato, calcaribus pendulis filiformibus, circa 2 cm. longis, ovarium longe superantibus; rostellum rhomboideum, medio sinubus glandularum angustatum, apice ampliatum obtuse rostratum; lobus stigmatiferus obovato-oblongus rostello aequilongus vel paullo longior; glandulae majusculae bene pone apicem rostellii positae. (*Ex exempl. plur. viv.*)

Hab: **South-eastern Region;** CAPE COLONY: Coldstream, near Grahamstown, March, *J. Glass*; Katberg, alt. 1380 met., fl. Jan., *W. C. Scully*, No. 394! = No. 1372, Herb. Norm. Aust-Afr.! Tembuland, Bazija, 750 met., Febr., *Baur*, No. 93!; Pondoland, 60 met., Oct., *Tyson*, No. 2609!; near Komgha, Oct., *Flanagan*, No. 526; Mt. Currie, near Kokstad, Febr., *Tyson*, No. 1087! in part, (excluding specimens also marked with the same number from same station "5500 ft. March").

Plate 70. Fig. 1, flower; 2, lip, side view, the spurs cut off; 3, sepals and petals, spread out by hand; 4, column, front view; 5, ditto, side view; 6, one of the pollinia,—all variously magnified.

A glabrous erect herb, 1-1½ feet high; scape from the tuber of the previous year, straight leafless clothed with herbaceous sheaths closely encircling the shaft; leaves 2-3, radical, from the tuber of the present season, ascending lanceolate acute mostly 7-nerved, 5-15 cm. long; spike cylindrical or oblong densely

many-fl., about 3 cm. in diameter, bracts lanceolate reflexed, sometimes minutely ciliolate, the lower ones much exceeding the flowers; sepals and petals spreading oblong obtuse, about 8 mill. long, sepals 3-nerved, petals 5-nerved; lip oblong-galeate, margin inflexed, free apex very obtuse emarginate crisped and bearded, without any ridge or with a very short one on the back, spurs filiform, about 2 cm. long, much longer than the ovary; rostellum rhomboid, narrowed in the middle by the recesses for the glands, widened and obtusely beaked at the apex; stigmatiferous lobe obovate-oblong as long as or a little longer than the rostellum; glands large, placed well behind the apex of the rostellum.

Described and drawn from living plants sent Nov. 1892 by Mr. Flanagan from near the mouth of the Kei R. Colour of the flowers white variably suffused with pink, and usually sweet-scented. A very similar looking but smaller flowered species which had previously been regarded as a variety of this species, has been distinguished and described by Mr. Schlechter as *S. neglectum*.



H. Bolus del.

F. Huth, Lith. Edin.

SATYRIUM STENOPETALUM, LINDLEY.

TAB. 71.

Tribe OPHRYDEAE.

Sub-tribe DISEAE.

Genus SATYRIUM.

Satyrium stenopetalum, *Lindley, Gen. & Sp. Orch., p. 336* (1838).—Herba glabra erecta, 1–1½-pedalis; caulis strictus subvalidus laxe foliatus; folia adscendentia lanceolata acuta subcoriacea marginata, inferiora 5–7 cm. longa, superiora remota sensim minora basi laxe vaginantia in bracteas abeuntia; spica elongata cylindrica laxe multiflora, bracteis erectis floribus brevioribus; sepala petalaeque lineari-oblonga subobtusa adscendenti-patentia, circa 1 cm. longa; labellum galeatum anguste ovoideum, apice libero in genere longissimo, calcaribus filiformibus ovario 2½plo longioribus; rostellum oblongum apicem versus angustatum; lobus stigmatiferus oblongus rostello longior; antherae connectivum liberum; ovarium 5-costatum, dorso compresso convexo ecostato. (*Ex exempl. plur. viv.*)

Hab: South-western Region; CAPE COLONY: Klein Vet R. (district Riversdale), fl. Nov., *Burchell*, No. 6856!, 6880!; Forest Hall, near Plettenberg Bay, *Miss Newdigate*!; near Storm's R., district Humansdorp, alt. 75 met., fl. Nov., *Schlechter*, No. 5995!

Plate 71. Fig. 1, flower, front view; 2, bract; 3, sepals and petals forcibly spread out flat; 4, lip, side view; 5, column, front view; 6, ditto, side view; 7, rostellum detached, after removal of the pollinia; 8, one of the pollinia; 9, section of the young ovary,—all variously magnified.

A glabrous erect herb, 1–1½ feet high; stem straight somewhat stout, laxly leafy; leaves ascending lanceolate acute subcoriaceous margined, the 2 or 3 lower more spreading, 5–7 cm. long, the upper smaller loosely sheathing at base and passing into bracts; spike long cylindrical loosely many-fl., bracts erect shorter than the flowers; sepals and petals linear-oblong subobtuse ascending and then spreading, about 1 cm. long; lip galeate narrow ovoid, free apex remarkably long in the genus, spurs filiform 2½ times longer than the ovary; rostellum oblong narrowed towards the apex; stigmatiferous lobe oblong, longer than the rostellum;

connective of the anther free from the column; ovary 5-ribbed, dorsally compressed, the back convex and without rib.

Described and drawn from living specimens received from Mr. Schlechter as above. Colour of the flowers white. Allied to *S. outeniquense*, *Schlechter* (see Tab. 68 above), but distinct by its slender perianth segments and long spurs. Another form is figured in our next plate.





H. Bolus del.

F. Buth, Lith. Edin.

SATYRIUM STENOPETALUM, LINDLEY.
var. BREVICALCARATUM.

TAB. 72.

Tribe OPHRYDEAE.

Sub-tribe DISEAE.

Genus SATYRIUM.

Satyrium stenopetalum, *Lindley, Gen. & Sp. Orch., p. 336* (1838).—Var. **brevicalcaratum**, a forma typica differt: habitu saepius robustiore; bracteis magis inflatis; perianthii segmentis latoribus; labelli calcaribus brevioribus ovario vix longioribus. (*Ex exempl. plur. viv.*)—*S. parviflorum*, *Lindley, Gen. & Sp. Orch., p. 336* (1838) non *Swartz*; *S. marginatum*, *Bolus, in Journ. Linn. Soc. (Bot.), vol. xx, p. 476* (1884); *ib., Orch. Cape Penins., in Trans. S. A. Philosoph. Soc., vol. v, p. 127* (1888).

Hab: South-western Region; CAPE COLONY: frequent in moist places on the sandy flats south and south-east of Cape Town, at 25–30 met. alt., fl. Oct., *Ecklon*, No. 1561!, 3913!; *Drège*, 1260a!; *Pappe*, 65, 66!; *Bolus*, 4550!; *MacOwan & Bolus*, *Herb. Norm. Aust.-Afr.*, No. 691!; Sir Lowry's Pass, and near Ceres, alt. 450 met., *Bolus*; Tulbagh Waterfall, 370 met., Nov., *Bolus*, 5551!

Plate 72. Fig. 1, flower, front view; 2, one of the side sepals; 3, one of the petals; 4, lip, posterior view; 5, odd sepal; 6, column, front view; 7, ditto, side view; 8, section of the ovary,—all variously magnified.

Characters of the typical form (see preceding plate) differing by its generally more robust habit; the segments of the perianth wider; spurs of the lip shorter, scarcely exceeding the ovary.

Described and drawn from a living plant gathered at Kenilworth, near Cape Town. Colour of the side sepals light pink, sometimes nearly white, rest of the flower white with faint green lines. I am indebted to *Mr. Schlechter*, who collected the typical form, for pointing out to me the essential identity of the present plant (which *Lindley* mistook for and published as *S. parviflorum*, *Swartz*,—a very different plant) with *Lindley's* own *S. stenopetalum*. When *Mr. N. E. Brown* had discovered, by his laborious and careful examination of *Thunberg's* herbarium, that *Lindley* had gone wrong, it seemed that a new name was

required for the present plant, and hence my name. In my later description I noted that the width of the sepals and petals was variable; but I was then unacquainted with *S. stenopetalum*. The present variety appears, so far as we know at present, to extend over a wider range, and to inhabit the extreme western portion of the Colony, while the typical form is a more easterly plant.



SATYRIUM LUPULINUM, LINDLEY.

TAB. 73.

Tribe OPHRYDEAE.

Sub-tribe DISEAE.

Genus SATYRIUM.

Satyrium lupulinum, *Lindley, Gen. & Sp. Orch.*, p. 338 (1838); *Bolus, Orch. Cape Penins., in Trans. S. A. Phil. Soc.*, vol. v, p. 127 (1888).—Herba glabra erecta, $\frac{3}{4}$ –1½-pedalis; caulis rectus foliosus; folia 3 inferiora conferta erecto-patentia ovata acuta undulata, 5–10 cm. longa, superiora sensim minora in bracteas vaginatas abeuntia; spica cylindrica dense multiflora, bracteis herbaceis reflexis ovatis flores superantibus; sepal recurvo-deflexa oblonga subobtusata, circa 9 mill. longa, intermedio angustiore; petala recurva sepalis breviora subfalcato-oblonga, dimidio superiore crispulato; labellum galeatum angustum, ore ovato, apice libero erecto obtuso, calcaribus filiformibus ovario paullo longioribus; rostellum adscendens oblongum truncatum; glandulae parvae utroque latere pone apicem rostellii insidentes; lobus stigmatiferus lineari-oblongus incurvus, rostellum fere duplo longior. (*Ex exempll. plur. viv. exsiccatisque.*)

Hab: South-western Region; CAPE COLONY: on the flats near Cape Town, and on the eastern slopes of Table Mt., alt. from 25 to 360 meters, fl. Sept.–Oct., not very common, *Bolus*, No. 4553; *MacOwan & Bolus*, Herb. Norm. Aust.-Afr. No. 1373!; Houw Hoek Mts., *Bolus*; Montagu Pass, George, Nov., *Schlechter*!—South-eastern Region; CAPE COLONY: Algoa Bay, *Forbes*!

Plate 73. Fig. 1, flower, front view; 2, one of the side sepals; 3, odd sepal; both spread out; 4, one of the petals spread out; 5, column, front view; 6, ditto, side view,—all variously magnified.

A glabrous erect herb, from a span to 1½ ft. high; stem straight leafy; lower leaves crowded erect-spreading ovate acute undulate, 5–10 cm. long, upper gradually smaller, passing into sheathing bracts; spike cylindrical densely many-fl., bracts herbaceous reflexed ovate, exceeding the flowers; sepals recurved oblong subobtusate, about 9 mill. long, the intermediate one narrower; petals recurved, shorter than the sepals, sub-falcate-oblong, the upper half of the margin crispulate; lip galeate narrow, mouth ovate free apex erect obtuse, spurs filiform, a

little longer than the ovary; rostellum ascending oblong truncate; glands small, on either side of the rostellum behind the apex; stigmatiferous lobe linear-oblong incurved, nearly twice as long as the rostellum.

Described and drawn from a living plant gathered near Cape Town. There are two colour varieties, one with dark brown, the other with tawny yellow flowers. These sometimes grow together, and do not seem to differ otherwise. The species is very distinct, not much resembling any other known to me. It does not appear to be common, and in some years is scarcely to be seen. Lindley describes the petals as sometimes minutely pubescent; I have never found them otherwise than glabrous.



H. Bolus del.

F. Huth, Lithr. Edinr

SATYRIUM MACROPHYLLUM, LINDLEY.

TAB. 74.

Tribe OPHRYDEAE.

Sub-tribe DISEAE.

Genus SATYRIUM.

Satyrium macrophyllum, *Lindley, Gen. & Sp. Orch., p. 338 (1838).*

—Herba glabra erecta, $1\frac{1}{2}$ –2-pedalis; caulis validus, bracteis vaginatis arcte vestitus; folia inferiora 2–3, adscendentia ovato-lanceolata acuta, 15–25 cm. longa, superiora sensim minora; spica oblonga dense multiflora, 3.5–4 cm. diametro, bracteis patentibus vel reflexis lanceolatis acuminatissimis flores superantibus; sepala patentia oblonga obtusa apiculata, circa 1.2 cm. longa; petala ligulata obtusa, sepalis angustiora parum breviora; labellum galeatum inflatum dorso bene carinatum, calcaribus filiformibus ovario paullo longioribus, 1.4 cm. longis; rostellum suborbiculare quadratumve antice denticulatum, glandulis approximatis; lobus stigmatiferus late obovatus, rostello subaequingus, stigmate pulvinato. (*Ex exempl. unico vivo plur. exsiccatisque.*)

Hab: South-eastern Region; CAPE COLONY: Pondoland, *Drye*: near Komgha, fl. Febr., *Flanagan*, No. 646!; near Kokstad, alt. 1850 met., fl. March, *Tyson*, No. 1089!; near Emyembi, 1550 met., March, *ib.*, No. 2087!—NATAL: near Richmond, 900 met., May, *Wood*, No. 1848! and near Umkomas, March, No. 4618!

Plate 74. The fig. to the left represents the whole plant reduced to one-third its natural size. Fig. 1, flower, front view; 2, ditto, side view; 3, sepals and petals forcibly spread out; 4, column, side view; 5, the upper part of the column, front view,—all variously magnified.

A glabrous erect herb, $1\frac{1}{2}$ –2 feet high; stem stout, closely clothed with sheathing bracts; lower leaves 2–3, ascending ovate-lanceolate acute, 15–25 cm. long, upper gradually smaller; spike oblong densely many-fl., 3.5–4 cm. in diameter, bracts spreading or reflexed, lanceolate very acuminate, longer than the flowers; sepals spreading oblong obtuse apiculate, about 1.2 cm. long; petals ligulate obtuse, narrower and slightly shorter than the sepals; lip galeate inflated, dorsally sharply ridged, spurs filiform longer than the ovary, 1.4 cm. long; rostellum suborbicular or nearly square, toothed in front, glands placed close together; stigmatiferous lobe widely obovate, about as long as the rostellum, stigma cushioned.

Described and drawn from a living plant sent by Mr. Flanagan from Komgha, and from several dried specimens. Colour of the flowers rose pink. A fine species with the habit of *S. Hallackii*, *mihi*, but with somewhat different flowers. *S. cristatum*, *Sond.*, with a similar dorsal ridge on the galea, has a different habit and column, and is also smaller in all parts.



H. Bolus del.

F. Huth, Lith. Edin.

SATYRIUM SPHAEROCARPUM, LINDLEY.

TAB. 75.

Tribe OPHRYDEAE.

Sub-tribe DISEAE.

Genus SATYRIUM.

Satyrium sphaerocarpum, *Lindley, Gen. & Sp. Orch., p. 337*, (1838).—Herba glabra erecta, 1-1½-pedalis; caulis validus gracilisve strictus foliosus; folia radicalia duo, laxe adscendentia, ovata vel lanceolata acuta, 7-12 cm. longa, caulina 2-3 in vaginas caulem arcuato cingentes reducta; spica oblonga vel cylindrica, dense multiflora, 3-4 cm. diametro, bracteis demum reflexis lanceolatis acuminatis flores superantibus; sepala lateralia patenti-decurva oblonga obtusa subfalcata, subtus 1-nerva, circa 1.5 cm. longa; sepalum impar deflexum paullo brevius; petala angustiora lineari-falcata sepalis aequilonga, omnia basi alte connata; labellum galeatum oblongum, dorso carinatum, circa 1.2 cm. longum, apice libero ovato obtuso crenulato, calcaribus infundibuli-filiformibus ovario plus minus longioribus; rostellum oblongum abbreviatum subtruncatum vel antice minute emarginatum; glandulae approximatae supra rostellum incumbentes, antherae connectivum a stipite columnae liberum; lobus stigmatiferus semiorbicularis pulvinatus, rostello multo major; ovarium ovatum, 6-10 mill. longum. (*Ex exempl. unico vivo plur. exsiccatisque.*)—*S. militare*, *Lindley, Gen. & Sp. Orch., p. 342* (1838).

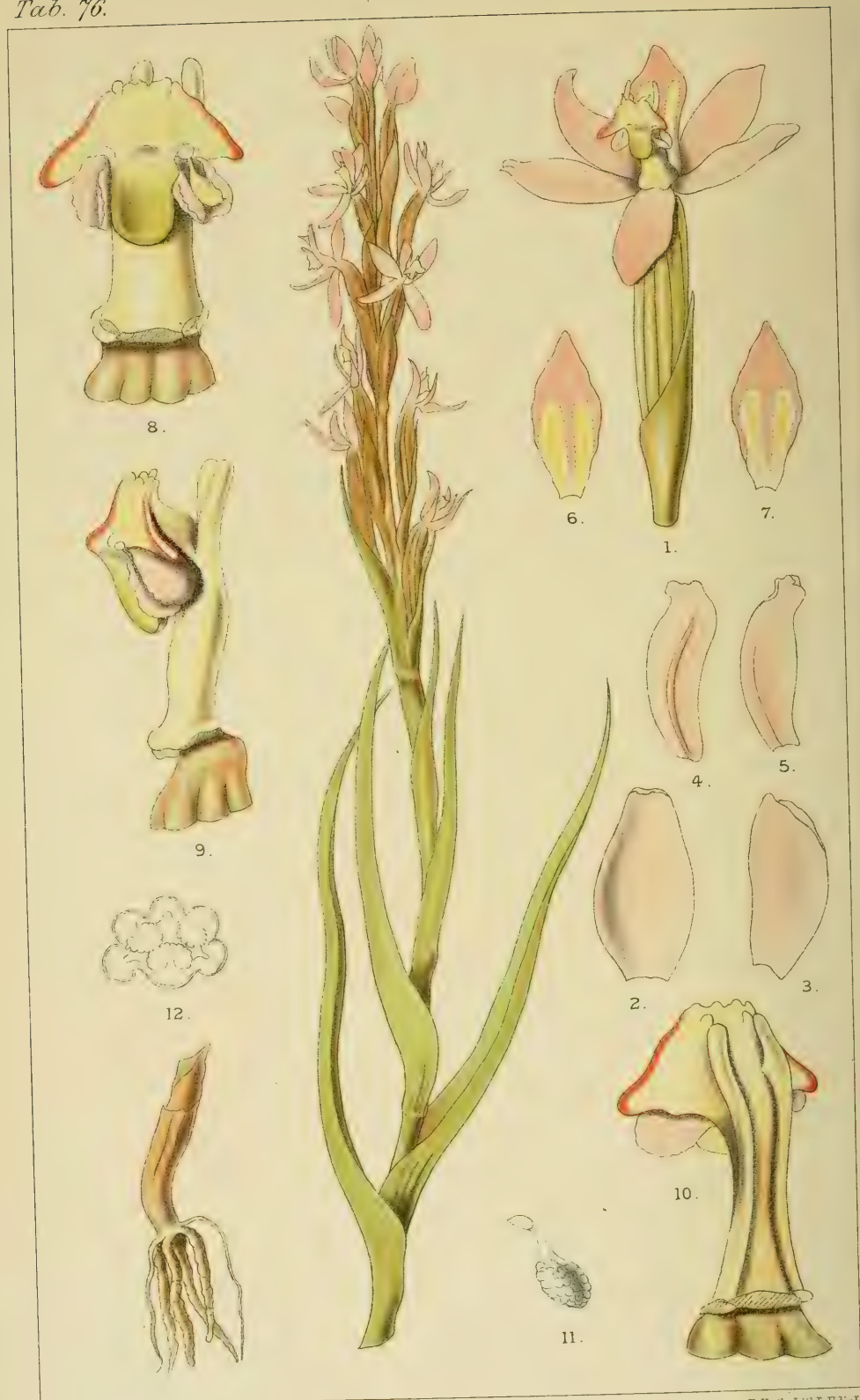
Hab: South-eastern Region; CAPE COLONY: Coldstream near Grahamstown, J. Glass; marshy places, Kei R. mouth, 60 met., fl. Jan., Flanagan, No. 648!; Tembuland, in various places, Febr., Bolus; Mount Frere, 1300 met., Jan., Schlechter, No. 6305!; near Kokstad, 1550 met., Febr., Tyson, No. 1081!; Pondoland, Emagushen, Tyson, No. 2840!.—*NATAL: Sandy flats near Durban, 30 met., Nov., Wood, No. 204! 1093, 1291; McKen & Gerrard, No. 8; Delagoa Bay, Forbes.*

Plate 75. Fig. 1, flower with bract; 2, lip, side view; 3, sepals and petals, spread out; 4, column, side view; 5, upper part of ditto, more magnified; 6, ditto, front view; 7, one of the pollinia,—all variously magnified.

A glabrous erect herb, 1-1½ feet high; stem stout or slender straight leafy; radical leaves 2, laxly ascending, ovate or lanceolate acute, 7-12 cm. long, cauline 2-3 reduced to stem-clasping sheaths; spike oblong or cylindrical, densely many-fl., 3-4 cm.

in diameter, bracts at length reflexed, lanceolate acuminate, longer than the flowers; side sepals spreading decurved, oblong obtuse subfalcate, strongly 1-nerved below, about 1.5 cm. long; odd sepal a little shorter, deflexed; petals narrower, linear-falcate, as long as the sepals, all connate below for about $\frac{1}{3}$ of their length; lip galeate oblong, with a dorsal ridge, about 1.2 cm. long, free apex ovate obtuse crenulate, spurs funnel-shaped above then filiform, variable in length, more or less exceeding the ovary; rostellum short oblong, wider than long, subtruncate or notched at the apex, with a minute sinus on either side the middle for the passage of the caudicles of the pollinia; glands approximate lying flat and entirely upon the upper surface of the rostellum; connective of the anther free from the column; stigmatiferous lobe semiorbicular, cushioned, much larger than the rostellum; ovarium ovate, 6-10 mill. long.

Described and drawn from a living plant sent by Mr. Flanagan from the Kei R. mouth, and from numerous dried specimens. Colour of flowers dingy white, variably tinged or blotched with pink, red or dark brown-red. A variable and widely distributed plant, well characterised by its deeply connate sepals and petals, by its very short broad ovary, and by the glands lying wholly upon the rostellum, and not in recesses on the same plane with it, as is usually the case. The flowers are amongst the largest of the genus. For the identification of this species with *S. militare*, Lindley, we are indebted to Mr. N. E. Brown, of Kew.



H. Böls del

F. Huth, Lith. Edin.

PACHITES APPRESSA, LINDLEY.

TAB. 76.

Tribe OPHRYDEAE.

Sub-tribe DISEAE.

Genus PACHITES.

Pachites appressa, *Lindley, Gen. & Sp. Orch., p. 301 (1835).*—Herba glabra erecta, $\frac{3}{4}$ – $1\frac{1}{2}$ -pedalis; caulis subflexuosus foliosus; folia circa 4–5 caulina ligulata acuminata erecta, infimum circa 10 cm. longum, superiora sensim minora in bracteas abeuntia; spica laxa multiflora, 9 cm. longa (vel, ex Lindley “fere pedalis densissima cylindrica floribus arcte appressis.”), bracteis lanceolatis inferioribus ovario subaequilongis; sepala late ovata subobtusata, 7 mill. longa, lateralibus patentibus, impari deflexo; petala erecto-patentia oblonga sepalis angustiora paulo breviora; labellum lanceolatum erectum, fasciis duabus parallelis coloratis ornatum; columna erecta stipitata perianthio brevior, postice processibus binis cornuiformibus rostello aequilongis aucta; rostellum terminale erectum crassum triangulare truncatum columna latius; antherae loculi in utroque latere stigmatibus positi, paralleli remoti adscendentes vix erecti; glandulae basi rostelli affixae nudaе remotae; stigma anticum majusculum oblongum vel subhippocrepiforme depressum marginatum; ovarium subcylindricum costatum. (*Ex exempl. unico vivo.*)

Hab: South-western Region; CAPE COLONY: near Swellendam, on the summit of the Langebergen, 15 Jan., 1815, *Burchell*, No. 7356! in herb. Kew; on the slopes of the same mts., near Zuurbraak, alt. about 1100 met. (also seen at 450 and 600 met., deflorate) fl. beginning of Jan. (1893), *R. Schlechter*, No. 2157!; also seen by him on the same range at Garcia’s Pass, near Riversdale, Febr., 1893, but deflorate.

Plate 76. Fig. 1, flower, front view; 2, one of the side sepals; 3, odd sepal; 4, 5, petals; 6, 7, the lip, showing either side; 8, column, front view; 9, ditto, side view; 10, ditto, viewed posteriorly; 11, one of the pollinia; 12, section of ovary.—all variously magnified.

A glabrous erect herb, $\frac{3}{4}$ – $1\frac{1}{2}$ feet high; stem subflexuous leafy; leaves about 4–5 along the stem, ligulate acuminate erect, the lowest about 10 cm. long, the upper gradually smaller passing into bracts; spike loosely many-fl., 9 cm. long (or, according to Lindley’s description and Burchell’s specimen, “almost a foot

long, very dense, cylindrical, the flowers closely appressed"), bracts lanceolate the lower ones about as long as the ovary; sepals broadly ovate subobtus, 7 mill. long, the side ones spreading, the odd one deflexed; petals erect-spreading oblong narrower and a little shorter than the sepals; lip lanceolate erect, with two parallel coloured stripes; column erect stipitate, shorter than the perianth, furnished behind with two horn-like processes (staminodes?) as long as the rostellum; rostellum terminal erect thick triangular truncate, wider than the column; cells of the anther placed one on each side of the stigma, parallel distant ascending but scarcely erect; glands affixed to the base of the rostellum, naked, distant; stigma in front rather large, oblong or somewhat horse-shoe-shaped depressed margined; ovary subcylindrical channelled.

Described and drawn from a living specimen sent by Mr. Schlechter, as above. Colour of the perianth lilac, the lip bearing two longitudinal parallel stripes, the anther a little darker, outer margins of the rostellum red. Respecting this most interesting and rare plant, the reader is referred to the remarks under Plate No. 26 (*Pachites Bodkini*) in the first part of this work. Burchell's type specimen in herb. Kew is so much larger and more densely-flowered than that figured that one might hesitate to identify them, especially as the flowers in that are rather too far advanced to give entirely satisfactory results. However, a careful dissection and drawing have left little doubt in my mind of the correctness of the identification. Lindley speaks of the anther as "resupinate"; and it appeared to me that the rostellum had fallen forward, age having altered its position, as is often the case in the Ophrydeae. The genus seems to connect *Disa* with *Satyrium*, but has very distinct characters of its own.—I may in this place ask the reader to correct an error in Plate 26, where the numbers 3 and 4 of the analytical figures, by an unfortunate mistake, have been transposed.



H. Bolus del.

F. Huth, Lith. Edin.

DISA AURICULATA, Bolus.

TAB. 77.

Tribe OPHRYDEAE.

Sub-tribe DISEAE.

Genus DISA.

Disa auriculata, n. sp. (§ Monadenia).—Herba glabra erecta, 13–36 cm. alta; caulis strictus laxè foliosus; folia anguste lanceolata acuta adscendentia, 4–8 cm. longa, superiora sensim minora; spica cylindrica multiflora longitudine dimidia totae plantae; bracteis lanceolatis acuminatis, superioribus floribus aequilongis, inferioribus flores excedentibus; sepala lateralibus basi lata oblonga subobtusa, obscure 3-nerva, 4–5 mill. longa; sepalum impar cucullatum oblongum obovatumve obtusum, lateralibus aequilongum, calcarè inflato obtuso limbo fere aequilongo donatum; petala rhomboideo-falcata antice incrassata, papillosa; labellum a fronte visum oblongum obtusissimum, a latere visum clavatum incrassatum carnosum, 3–4·5 mill. longum; rostellum erectum obovatum, plica auriculiformi utroque latere apicem versus ornatum. (*Ex exempl. 2 viv. plur. exsiccatisque.*)

Hab: South-western Region; CAPE COLONY: on the Steenberg Mt. of the Cape Peninsula, at about 360 met. alt., fl. Oct., *F. Guthrie, junior!*; in grassy places near Storm's River, distr. Humansdorp, alt. 90 met., fl. Nov., *Schlechter*, No. 5958!

Plate 77. The whole plant is drawn from a specimen of *Schlechter's* as above; the analytical figures from a smaller plant of *Guthrie's*, differing only from the former in slight details. Fig. 1, flower; 2, 3, odd sepal, front and side view; 4, one of the side sepals; 5, petals, with column; 6, a petal, outer side; 7, lip, side view; 8, column, side view; 9, ditto, back view; 10, ditto, front view; 11, pollinia,—all variously magnified.

A glabrous erect herb, 13–36 cm. high; leaves ascending narrow lanceolate acute, 4–8 cm. long, the upper gradually smaller; spike cylindrical many-fl., about half the length of the whole plant; bracts lanceolate acuminate, the upper equalling, the lower longer than the flowers; side sepals from a wide base oblong subobtuse, obscurely 3-nerved, 4–5 mill. long; odd sepal cucullate oblong or obovate obtuse, as long as the side sepals, spur inflated obtuse nearly as long as the limb; petals rhomboid-

falcate, thickened in front, papillose; lip viewed from the front oblong, very obtuse, viewed from the side clavate thickened and fleshy, 3-4.5 mill. long; rostellum erect, obovate, with an ear-like fold on either side towards the apex.

Described from the specimens quoted above, the figure of the whole plant drawn from Mr. Schlechter's. In the latter, the flowers were dingy yellow tinged with red-purple; in Mr. Guthrie's, yellow only. The chief characteristic is in the thickened lip and petals, and the auricled rostellum. It comes near to *D. multiflora, miki*, in its flowers, but the spike is always slenderer, and the inflorescence usually less dense. It also somewhat resembles *D. micrantha*, but the flowers are larger, and the spur and column very different.



H. Bolus del

F. Huth, Lith. Edin.

DISA STRICTA, SONDER.

TAB. 78.

Tribe OPHRYDEAE.

Sub-tribe DISEAE.

Genus DISA.

Disa stricta, Sonder, in *Linnaea*, vol. xix, p. 91 (1847) (§ Eu-disa).
 —Herba glabra erecta, 1-1½-pedalis; caulis substrictus foliosus; folia 3-6, ensiformia acuta 3-nerva, infimum 10-15 cm. longum, superiora sensim breviora, in bracteas abeuntia; spica cylindrica vel oblonga, 5-10 cm. longa, bracteis lanceolatis acuminatissimis submembranaceis 3-5-nervis, inferioribus flores superantibus, superioribus brevioribus; sepala lateralibus deflexa late ovata sub apice mucronulata, 4-5 mill. longa; sepalum impar galeatum basi infundibulare in calcare filiformi adscendente ovario 3plo brevior sensim attenuatum; petala nana sub galea inclusa uncinata acuminata basi auriculata incurva, columnam paullo superantia; labellum linguaeforme retusum, 3-4 mill. longum; rostellum quadratum; glandulae approximatae, stigma subexcavatum; ovarium gracile, 1-1.5 cm. longum. (*Ex exempl. plur. viv. exsiccatisque.*)

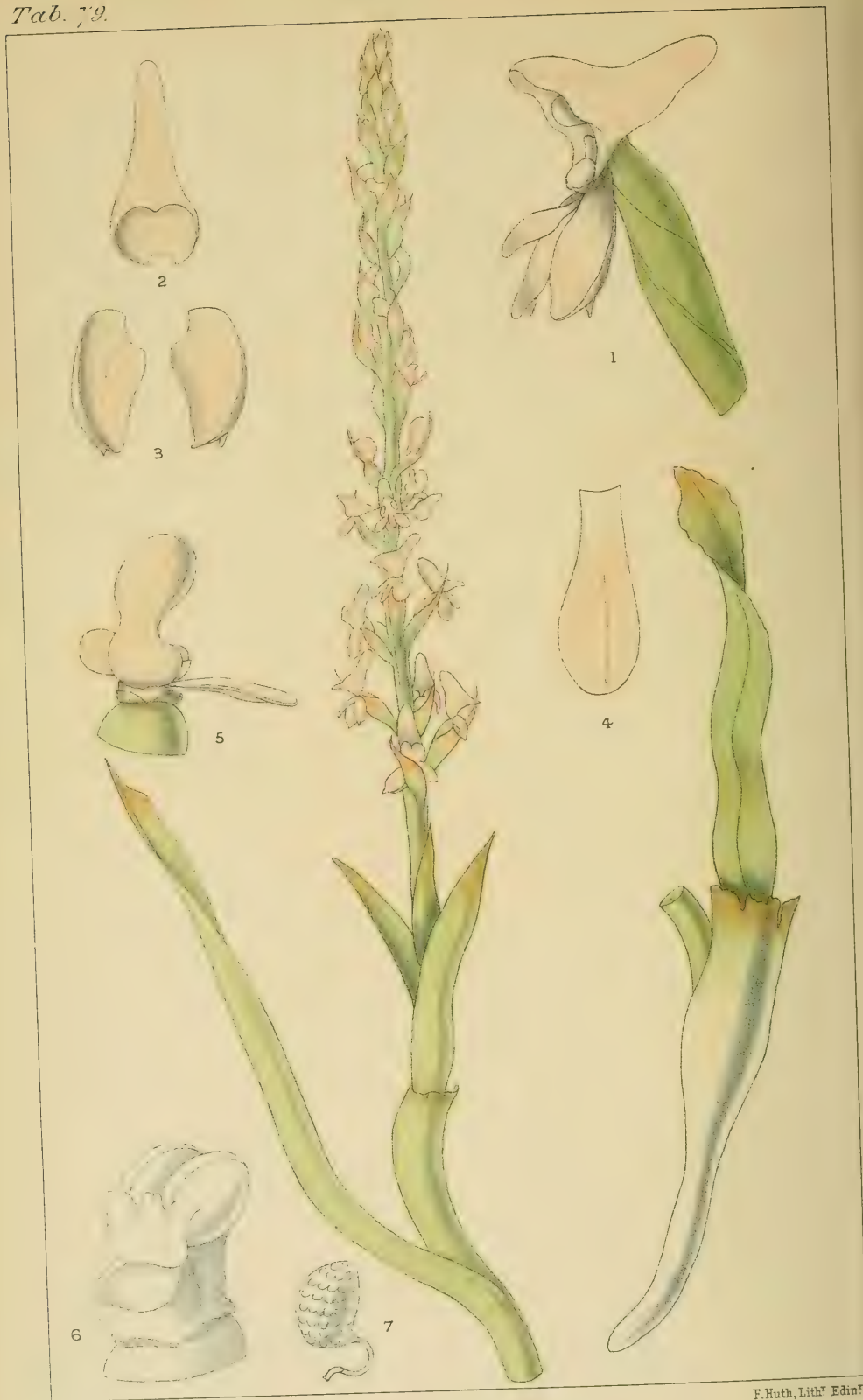
Hab: South-eastern Region; CAPE COLONY: On the Winterberg, alt. between 1050 & 1850 met., Dec., Ecklon & Zeyher; Southern slopes of the Katberg, Nov., Scully, No. 140!; Mt. Kemp, King William's Town, 1200 met., Nov., T. R. Sim!

Plate 78. Fig. 1, flower; 2, odd sepal; 3, one of the side sepals; 4, lip; 5, column, with petals; 6, one of the petals; 7, column; 8, pollinia,—all variously magnified.

A glabrous erect herb, 1-1½ ft. high; stem usually straight leafy; leaves 3-6, erect-spreading sword-shaped acute 3-nerved, the lowest 10-15 cm. long, the upper gradually smaller, passing into bracts; spike cylindrical or oblong, 5-10 cm. long, bracts lanceolate very acuminate somewhat membranous 3-5-nerved, the lower ones exceeding, the upper ones shorter than, the flowers; side sepals deflexed, broadly ovate, mucronulate below the apex, 4-5 mill. long; odd sepal galeate, funnel-shaped at the base, contracted gradually into a filiform ascending spur one-third the length of the ovary; petals small, included within the galea, uncinata acuminate, auriculate at base, incurved, a

little longer than the column ; lip tongue-shaped retuse, 3-4 mill. long ; rostellum nearly square ; glands approximate ; stigma somewhat hollowed ; ovary slender, 1-1.5 cm. long.

Described from several living plants sent to me by Mr. Sim from the station named above, and from one of which the drawing was made. Colour of the flowers pale bluish purple or mauve. A pretty little species, though the flowers are small, and those of our figure seem a little below the average size.



H. Bolus del.

F. Huth, Lith. Edin.

DISA ACONITOIDES, SONDER.

TAB. 79.

Tribe OPHRYDEAE.

Sub-tribe DISEAE.

Genus DISA.

Disa aconitoides, *Sonder, in Linnaea, vol. xix, p. 91 (1847)*; *Harvey, Thes. Cap., t. 41 (1859)*.—(§ Eu-disa.)—Herba glabra erecta, 1-2-pedalis; caulis substrictus foliosus; folia lanceolata acuta, internodiis longiora, inferiora 10-15 cm. longa, superiora sensim minora; spica cylindrica, saepe caule longior, dense multiflora, bracteis lanceolatis acuminatis venosis floribus subaequilongis; sepala lateralia deflexa oblonga obtusa concava, sub apice mucronulata, circa 4 mill. longa; sepalum impar deflexum galeatum, breviter acutum, alte saccatum sacco adscendente obtuso, totum 7 mill. longum; petala sub galea inclusa oblonga basi et apice rotundata, medio sinu rotundato exciso, columnae adnata; labellum oblongo-obovatum deflexum, sepalis brevius; rostellum erectum majusculum subquadratum. (*Ex exempl. plur. viv.*)

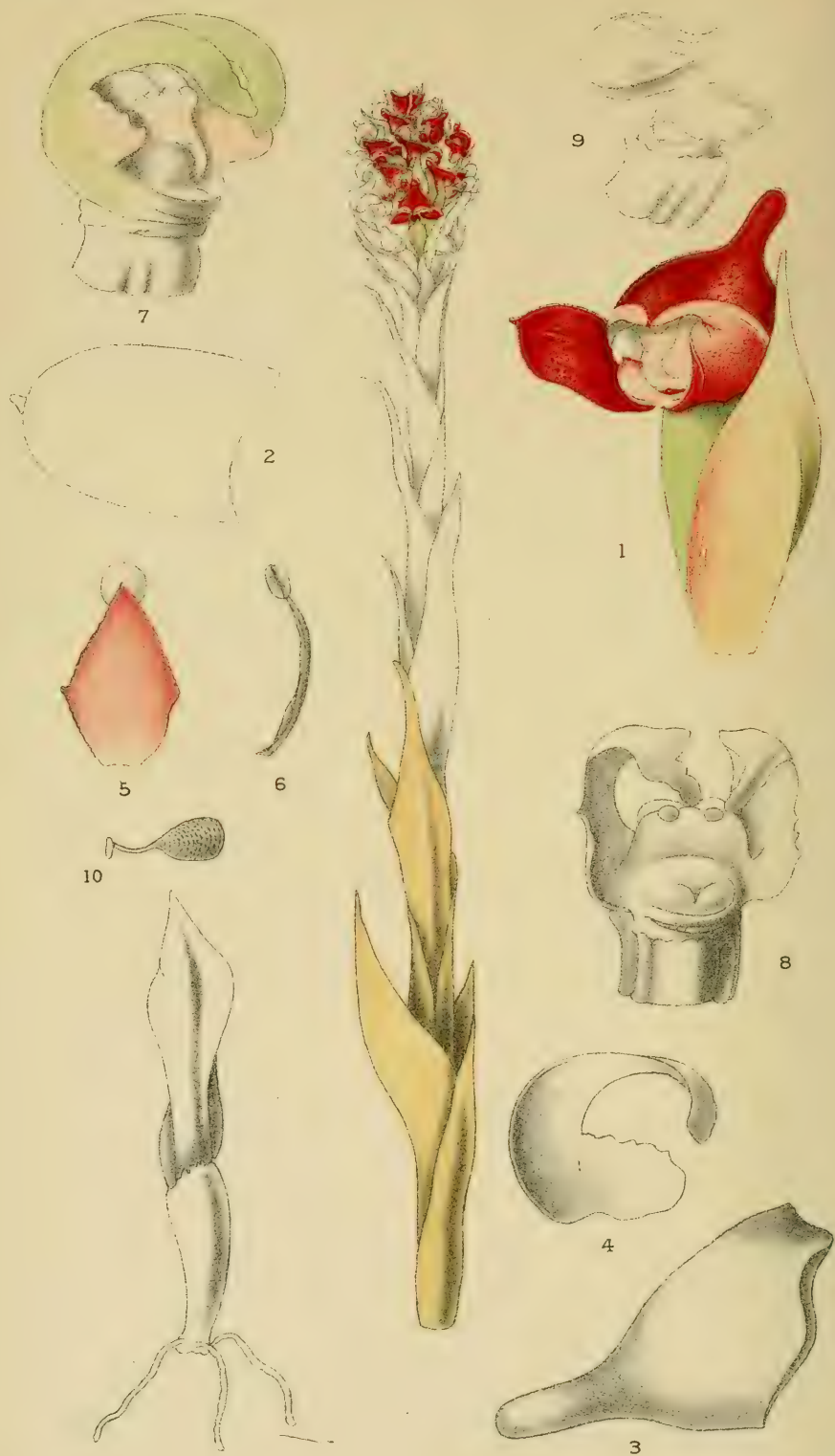
Hab: South-eastern Region; CAPE COLONY: woods near Bushman's R., Olifant's Hoek, fl. Nov., *Zeyher*; near Grahamstown, alt. 675 met., fl. Nov., *Galpin*, No. 306!; *MacOwan*: Perie Forest, alt. 1800 met., *T. R. Sim*!; *Komgha, Flanagan*.—NATAL: Grey Town, *Mrs. Saunders*; near Inanda, *Wood*, No. 1418!; *Dargle*, Oct., *J. Sanderson*, No. 745! — TRANS-VAAL REPUBLIC: Elandsspruitbergen, alt. 2200 met., Dec., *Schlechter*, No. 3851!

Plate 79. Fig. 1, flower; 2, odd sepal; 3, lateral sepals; 4, lip; 5, flower, with the sepals removed; 6, column; 7, one of the pollinia, —all variously magnified.

A glabrous erect herb, 1-2 feet high; stem mostly straight leafy; leaves lanceolate acute, longer than the internodes, the lower ones 10-15 cm. long, the upper gradually smaller; spike cylindrical often longer than the stem, densely many-fl., bracts lanceolate acuminate veined, about as long as the flowers; side sepals deflexed oblong obtuse concave, mucronulate below the apex, about 4 mill. long; odd sepal deflexed galeate, shortly acute, with a long ascending obtuse sac or spur, in all about 7 mill. long; petals included within the galea, oblong, rounded at the base and apex and with a rounded recess cut out in the

middle ; lip oblong-obovate deflexed, shorter than the sepals ;
rostellum rather large erect somewhat square.

Described and drawn from a specimen sent by Mr. Sim from the Perie Mt., and I have since seen numerous others from different parts of the country. The specimen drawn is one of the smallest, the average size being about 14 in. high. Colour of the flowers very pale lilac, with darker but yet pale purple spots, ovaries and stem green with purple spots, bracts withering and brown at the tip. A widely spread species of distinct character, recognizable at a glance.



H. Bolus del.

F. Huth, Lithr. Edinb.

DISA SANGUINEA, SONDER.

TAB. 80.

Tribe OPHRYDEAE.

Sub-tribe DISEAE.

Genus DISA.

Disa sanguinea, *Sonder, in Linnaea, vol. xix, p. 97 (1847).*—(§ Eudisa.)—Herba glabra erecta, spithamæa ad pedalem; caulis robustus substrictus foliosus; folia inferiora ad vaginas reducta, superiora lanceolata acuta internodiis longiora, 3·5–5 cm. longa, suprema in bractæas abeuntia; spica cylindrica dense multiflora, 2·5–4 cm. longa, bracteis ovatis acuminatis floribus subaequilongis; flores parvi, 5 mill. longi, externe velutini; sepala lateralìa adscendentia late oblonga obtusissima, 3 mill. longa; impar subgaleatum hemisphaericum apice mutico vel interdum emarginato, calcare adscendente cylindrico obtuso, galea breviorè; petala sub galea inclusa incurva e basi latiore margine erosula lineari-falcata apice denticulata, sepalis multo breviora; label-lum rhomboideum acutum (vel, ex beato Sonder “nanum lineare membranaceum”) apice glandula sphaeroidea pellucida ornata. (*Ex exempl. unico vivo.*)—*D. Huttonii, Reichenbach fil., Otia Bot. Hamb., p. 105 (1881).*

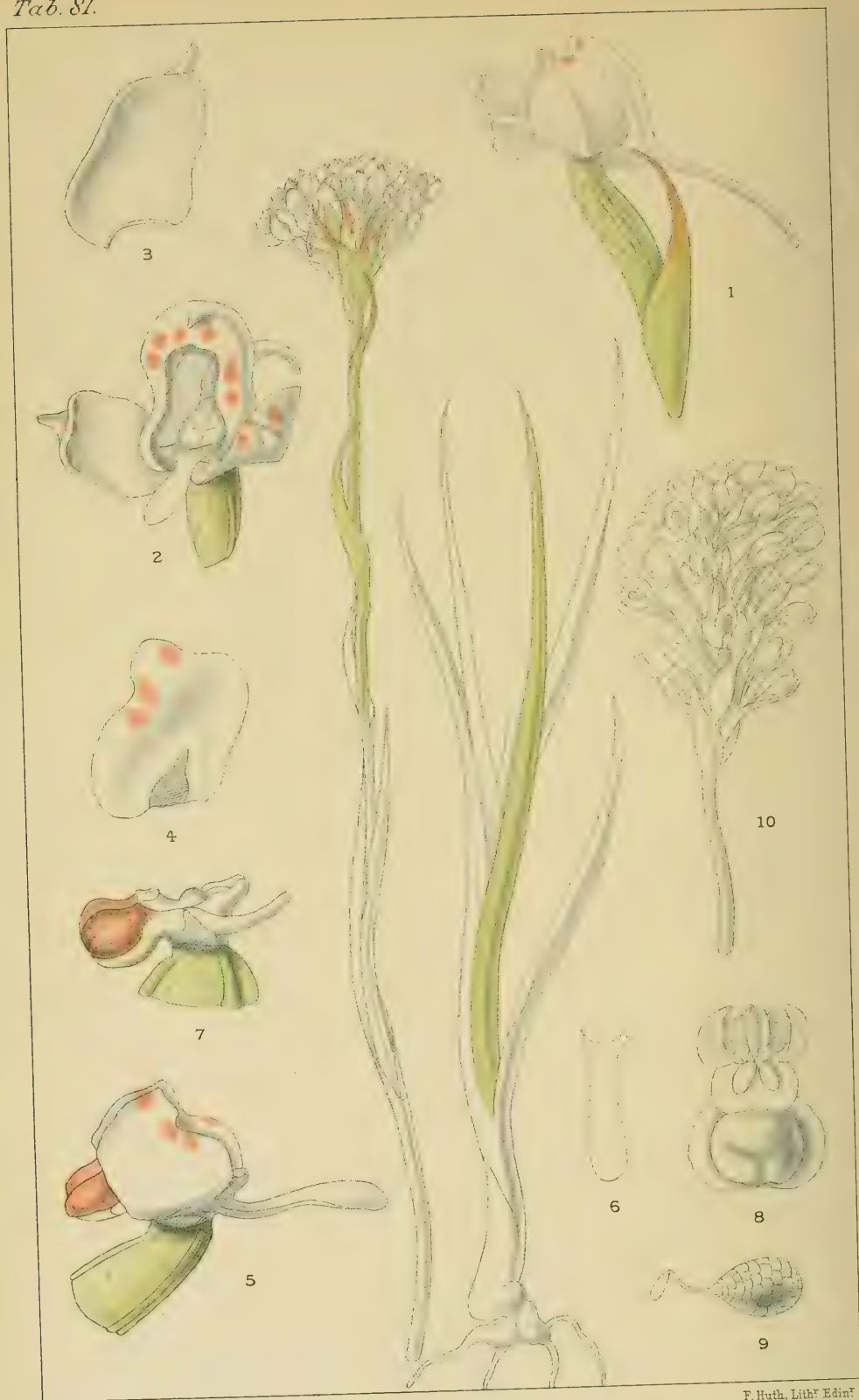
Hab: South-eastern Region; CAPE COLONY: moist stony places on the Winterberg, fl. Dec., *Zeyher*; Katberg, *Hutton*, No. 53! in herb. Kew; Mt. Kemp, alt. 800–900 met., fl. Nov., *T. R. Sim*, No. 1497! in my herb.

Plate 80. Fig. 1, flower, magnified about 6 diameters; 2, one of the side sepals; 3, odd sepal; 4, one of the petals; 5, 6, lip, front and side view; 7, column, with petals; 8, ditto, front view; 9, ditto, side view; 10, one of the pollinia,—all the latter magnified about 10 diameters.

A glabrous erect herb, from a span to a foot high; stem robust somewhat straight leafy; lower leaves reduced to sheaths, upper lanceolate acute longer than the internodes, 3·5–5 cm. long, gradually passing into bracts; spike cylindrical densely many-fl., 2·5–4 cm. long, bracts ovate acuminate about as long as the flowers; flowers small, about 5 mill. long, the sepals externally velvety; side sepals ascending broadly oblong very obtuse, 3 mill. long; odd sepal subgaleate hemispherical muticous or

emarginate, spur ascending cylindrical obtuse shorter than the galea; petals included within the galea, incurved, from a wider base erosulate on the upper margin linear-falcate toothed at the apex, much shorter than the sepals; lip rhomboid acute (or, according to Sonder, small, linear, membranous) with a small pellucid gland at the apex resembling a dew-drop.

Described and drawn from Mr. Sim's specimen from Mt. Kemp. Colour of the sepals deep crimson, a lighter band on the edge of the galea, petals rosy. A very well marked and peculiar species, with some curious characteristics, especially the gland at the apex of the lip. Mr. N. E. Brown of the Kew Herbarium satisfied himself, by dissection and comparison, of the identity of Zeyher's and Hutton's plants; and I have compared Sim's with Hutton's, and have no doubt of their being the same. Respecting the difference of Sonder's description of the shape of the lip, this may be due to a shrivelling in the drying, or to a natural variation, or to both causes combined. Nor does Sonder mention the singular gland on the lip, but in both Hutton's and Sim's dried specimens this is still quite clearly visible, and I do not know how it can have escaped Reichenbach's observation. The species seems to be somewhat rare; Mr. Sim only found one specimen, which he very generously contributed to my herbarium.



H. Bolus del.

F. Huth, Lithr. Edinr

DISA CEPHALOTES, REICHENBACH FIL.

TAB. 81.

Tribe OPHRYDEAE.

Sub-tribe DISEAE.

Genus DISA.

Disa cephalotes, *Reichenbach fil., Otia Bot. Hamb., p. 106 (1881).*
—(§ Eu-disa.)—Herba glabra erecta, $\frac{3}{4}$ – $1\frac{1}{2}$ -pedalis; caulis strictus gracilis paucifolius; folia erecto-patentia lineari-lanceolata acuminata laxa, inferiora 10–16 cm. longa, superiora sensim minora in bracteas vaginatas abeuntia; spica conferta subcapitata, demum elongata, dense multiflora, bracteis erectis foliaceis lanceolatis acuminatis ovario subaequilongis; sepala lateraliter erecto-patentia oblonga obtusa concava, sub apice apiculata, 4–5 mill. longa; sepalum impar cucullatum, marginibus circa ostium valde inflexis, apice obtusum apiculatum, basi in calcar gracile filiforme patenti-arcuatum limbo longius ovario brevius productum; petala sub sepalo impari inclusa parva rhomboidea obtusa, columnae basi adnata; labellum patens lineari-oblongum obtusissimum, basi ampliatus columnam cingens, 3.5 mill. longum; anthera reclinata, glandulis ovatis approximatis; rostellum perbreve; stigma majusculum pulvinatum 3-lobum. (*Ex exempl. plur. viv., aliisque exsiccatis.*)

Hab: South-eastern Region; CAPE COLONY: on the summit of the Boschberg, near Somerset East, alt. 1880 met., fl. Febr., *MacOwan*, No. 1533!, in my herb.; west slopes of Eland'sberg, near Stockenström, 1540 met., Febr., *Scully*, No. 408!; Hanglip Mt., near Queens-town, 1840 met., fl. Jan., *Galpin*, No. 1777!; Dohne Mt., Jan., *T. R. Sim*!; on the Engcobo Mt., Tembuland, 1800 met., Jan., *Bolus*.—ORANGE FREE STATE: Bester's Vallei, distr. Harrismith, *Miss Sarah Jacobsz*!

Plate 81. Fig. 1, flower and bract; 2, flower, front view; 3, a side sepal; 4, a petal; 5, flower, the sepals being removed; 6, lip (magn. about 6 diams.); 7, column, side view; 8, ditto, viewed from above; 9, one of the pollinia,—all variously magnified; 10. head of flowers from a dried specimen of another plant,—natural size.

A glabrous erect herb, $\frac{3}{4}$ – $1\frac{1}{2}$ ft. high; stem straight slender few-leaved; leaves erect-spreading linear-lanceolate acuminate lax, lower 10–16 cm. long, upper gradually smaller passing into

sheathing bracts; spike crowded subcapitate, at length elongating, densely many-fl., bracts erect leaflike lanceolate acuminate, about as long as the ovary; side sepals erect-spreading oblong obtuse concave apiculate below the apex, 4-5 mill. long; odd sepal cucullate, margin round the mouth much inflexed, obtuse apiculate, produced at base into a slender arched and spreading spur longer than the limb, and shorter than the ovary; petals included within the odd sepal, small rhomboidal obtuse adnate to the column at base; lip spreading linear-oblong very obtuse, widened at base and clasping the column, 3.5 mill. long; anther reclinate, glands ovate approximate; rostellum very low; stigma rather large cushioned 3-lobed.

Described and drawn from a living specimen sent by Mr. Galpin from Queenstown, and from numerous other living and dried specimens, including Mr. MacOwan's type. Colour of the flowers chiefly pure white, the sepals and petals with a few purple spots. Under a lens they are velvety in texture. The species somewhat resembles *Brownleea* in the setting of the galea, and in its habit, but the resemblance is only superficial. Most previous collectors have, apparently, found it somewhat rare; but I saw it in some quantity in a grassy sheltered kloof of the Engcobo Mt. in Tembuland, in Jan. 1896.



H. Bolus del.

F. Huth, Lith. Edin^r

DISA UNCINATA, Bolus.

TAB. 82.

Tribe OPHRYDEAE.

Sub-tribe DISEAE.

Genus DISA.

Disa uncinata, *Bolus*, in *Journ. Linn. Soc. (Bot.)*, vol. xx, p. 478 (1884).—(§ Eu-disa.)—Herba glabra erecta vel leviter decumbens, $\frac{1}{2}$ –1-pedalis; caulis subgracilis strictus vel flexuosus paucifolius; folia radicalia 3–4, laxa patentia lineari-lanceolata acuta, 5–10 cm. longa; caulina 2–3, conformia minora erecta; spica laxa 3–20-fl., bracteis foliaceis ovarii brevioribus; sepala lateralia patentia oblonga concava acuta infra apicem dorso apiculata, circa 7 mill. longa; sepalum impar posticum galeatum obovatum emarginatum deflexum, calcare tubo constricto apice inflato, 4 mill. longo; petala sub galea inclusa parva uncinato-falcata acuminata basi ampliata dentata; labellum deflexum lineare acutum, 4 mill. longum; anthera resupinata; stigma majusculum pulvinatum marginatum; ovarium cylindricum, 1.2 cm. longum. (*Ex exempl. plur. viv.*)

Hab: **South-western Region;** CAPE COLONY: on mountains near Mitchell's Pass, in moist clay soil, alt. 400–450 met., fl. Oct., *Bolus*, No. 5279, 6095; Bain's Kloof, *Cooper*, No. 3598!; west side of Table Mt., Oct., *Chalwin*!; east side of ditto, Dec., *Schlechter*; Langebergen, near Swellendam, Jan., *Bodkin*! — **South-eastern Region;** CAPE COLONY: Albany, *Cooper*, No. 1878!

Plate 82. Fig. 1, 2, odd sepal; 3, side sepals; 4, petals; 5, lip; 6, column with petals; 7, column,—all variously magnified.

A glabrous erect or somewhat decumbent herb, $\frac{1}{2}$ –1 ft. high; stem rather slender straight or flexuous few-leaved; radical leaves 3–4, loosely spreading linear-lanceolate acute, 5–10 cm. long, cauline 2–3, similar but smaller and erect; spike loosely 3–20-fl., bracts leaf-like shorter than the ovaries; side sepals spreading oblong acute concave apiculate below the apex, 7 mill. long; odd sepal posticous galeate obovate emarginate deflexed, spur constricted in the middle of the tube inflated at the apex, 4 mill. long; petals included within the galea small uncinato-falcate acuminate, dilated and toothed at the base; lip deflexed linear-acute, 4 mill. long; anther resupinate; stigma rather large cushioned margined; ovary cylindrical, 1.2 cm. long.

Described from several living and dried specimens: the drawing made from a plant sent from the neighbourhood of Worcester. Colour of the sepals dull white, passing at the back of the galea and the tips of the side sepals into brown-purple, petals pale yellow in front with purple points, lip pale yellow. In habit this resembles *D. caulescens*, *Lindley* (see t. 31 in the first part of this work) and in the dried state might be taken for it, but the floral characters are abundantly diverse. Small and laxly-flowered specimens might be confused with *D. ocellata*, *mihi*; but the leaves of the latter are narrower and erect, and the galea is oblong and acuminate. While most of our Orchids love a light or even sandy soil, this seems generally to prefer a stiff greyish clay. It is by no means a common species, and I cannot avoid a suspicion as to the correctness of the single widely isolated eastern station quoted from Cooper's ticket.



H. Bolus del.

F. Huth, Lith. Edinb.

DISA LONGIFOLIA, LINDLEY.

TAB. 83.

Tribe OPHRYDEAE.

Sub-tribe DISEAE.

Genus DISA.

Disa longifolia, *Lindley, Gen. & Sp. Orch., p. 349 (1838).*— (§ Eu-disa). — Herba erecta tota fere glabra, 7·5–37 cm. alta; caulis strictus paucifolius; folia erecta saepe incurva linearia acuminata, 5–20 cm. longa, superiora sensim minora in bracteas abeuntia; spica ovata vel oblonga saepius breviuscula, 1·5–3 cm. diametro, sub dense 8–20-fl., bracteis inferioribus flores saepius multo superantibus, superioribus floribus brevioribus; sepala labellumque plus minus scabriusculovelutina; sepala lateralia patentia oblique oblonga vel lineari-oblonga subobtusapiculata, 6–8 mill. longa; sepalum impar posticum galeatum acuminatum, 1·2 cm. longum, calcare subcylindrico compresso, medio constricto, apice paullo inflato, circa 4 mill. longo; petala sub galea inclusa supina oblongo-falcata acuminata apice adscendentia, basi dentata, 4–5 mill. longa; labellum lineare vel lineari-lanceolatum patentidecurvum, 5–6 mill. longum; rostellum abbreviatum vix ultra stigma elevatum; anthera reflexa, subpendula. (*Ex exempl. plur. viv.*)

Hab: South-western Region; CAPE COLONY: Piquetberg, alt. 600–900 met., Nov., *Drège*, No. 564; marshy places, Hex R. Valley, 450 met., Oct., *Tyson*, No. 644!; rocky places near Ceres, 550 met., Oct., *Bodkin* (No. 7325 in my herb.).

Plate 83. Fig. 1, flower, front view; 2, one of the side sepals; 3, odd sepal; 4, column with petals and lip; 5, column with lip and one petal in position; 6, lip; 7, lip, from another plant and from a different locality; 8, base of the spur of the galea, under side, from the plant last mentioned,—all variously magnified.

An erect almost entirely glabrous herb, from a span to a foot high or more; stem straight few-leaved; leaves erect, often incurved, linear acuminate, 5–20 cm. long, the upper gradually smaller and passing into bracts; spike ovate or oblong, mostly rather short, 1·5–3 cm. in diameter, somewhat densely 8–20-fl., lower bracts longer, upper shorter than the flowers; sepals and lip more or less roughly or velvety pubescent; side sepals spreading, obliquely oblong or linear-oblong subobtusapiculate, 6–8 mill. long; odd sepal posticous galeate acuminate, 1·2 cm.

long, spur cylindrical compressed, constricted in the middle, inflated at the apex, 4 mill. long; petals included within the galea supine oblong-falcate acuminate, ascending at the apex, toothed at base, 4-5 mill. long; lip linear or linear-lanceolate spreading-decurved, 5-6 mill. long; rostellum very short, scarcely rising above the stigma; anther reflexed, somewhat pendulous.

Described from several living and dried specimens, including Drège's types; the drawing from a plant gathered near Ceres. Colour of the flowers white with a greenish yellow patch on each side of the odd sepal down to the end of the spur, also on each side of the side sepals, a purple stripe on the lip and on the edges of the petals. A variable species as to the length and thickness of the spur, and the amount of pubescence on the sepals and lip. A very distinct species, not easily to be mistaken for any other.



H. Bolus del.

F. Huth, Lith. Edin.

DISA NERVOSA, LINDLEY.

TAB. 84.

Tribe OPHRYDEAE.

Sub-tribe DISEAE.

Genus DISA.

Disa nervosa, *Lindley, Gen. & Sp. Orch.*, p. 352 (1838).—(§ *Coryphaea*).—Herba glabra erecta, 1-2-pedalis; caulis validus strictus foliosus; folia plura erecto-patentia lanceolata vel lineari-lanceolata acuta enerva vel multinerva, 2·5-15 cm. longa, internodiis multo longiora, in bracteas sensim abeuntia; racemus ovatus oblongusve, laxe vel dense multiflorus, 4-7 cm. diametro, flores patentes plerique bracteis venosis acuminatis paullo longiores; sepala lateralibus oblonga obtusa apiculata subtorta, 1-2 cm. longa; sepalum impar posticum galeatum oblongum obtusum, calcare basi infundibulari sensim attenuato filiformi limbo paullo brevior; petala semi-exserta erecta falcato-oblonga obtusa apiculata, 6-10 mill. longa; labellum patens lineare apicem versus ampliatus incrassatus, sepalis paullo longius; rostellum abbreviatum; ovarium gracile rectum, 1·5-2·8 cm. longum. (*Ex exempll. plur. viv.*)—*D. patula*, *Sonder, in Linnaea*, vol. xix, p. 94 (1847); *D. stenoglossa*, *Bolus, in Journ. Linn. Soc. (Bot.)*, vol. xxv, p. 173 (1889).

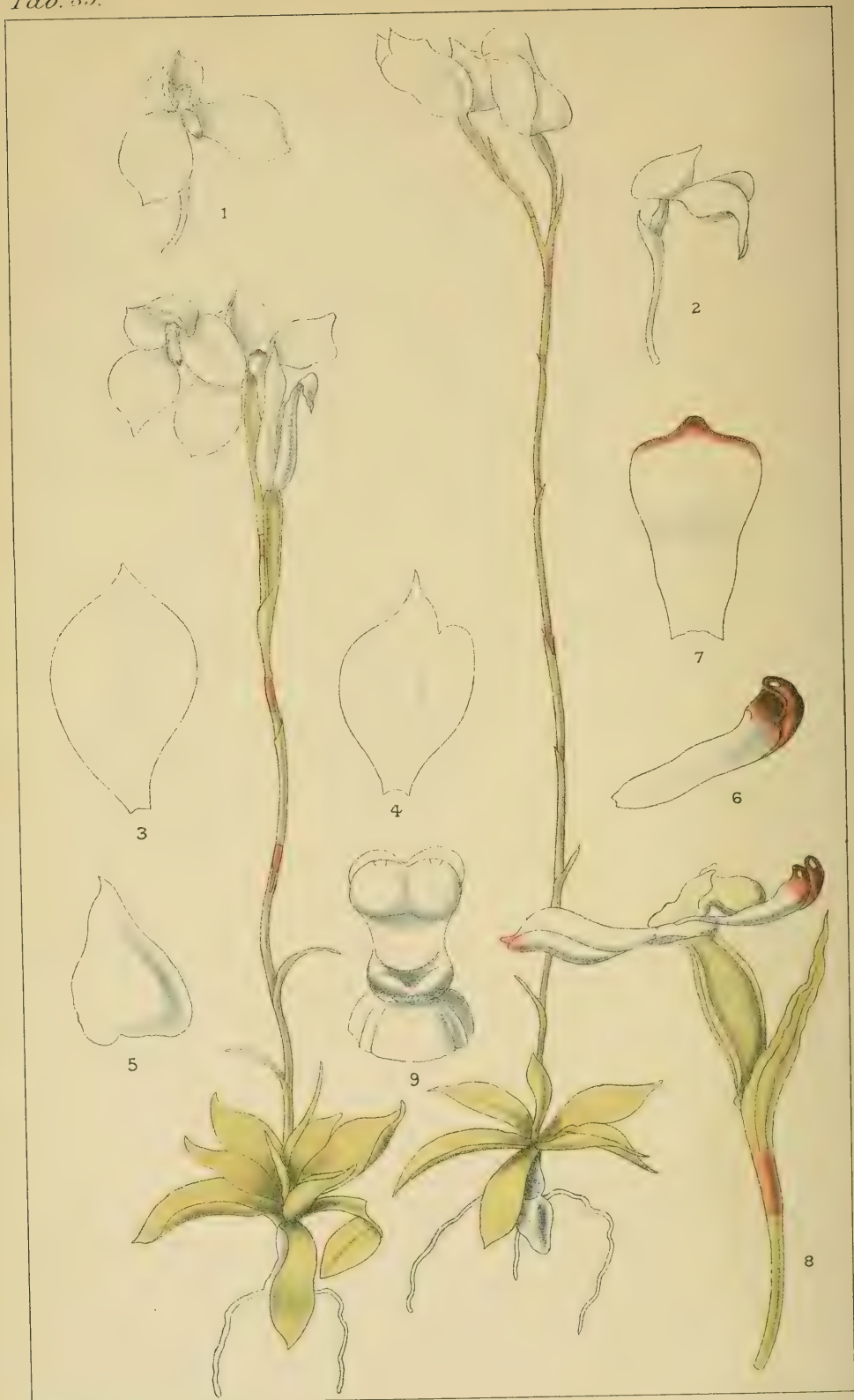
Hab: **South-eastern Region**; CAPE COLONY: Featherstone's Kloof near Grahamstown, Dec., *MacOwan*, No. 678!; south slope of the Winterberg, Dec., *Zepher*; Pondoland, in various places, *Drège*, *Flanagan*, *Bolus*; near Kokstad, alt. 1600 met., Dec., *Tyson*, No. 1599!—NATAL: near Howick, Febr., *Fannin*; Mooi R., alt. 1300 met., Nov., *Wood*, No. 4077!—TRANS-VAAL REPUBLIC: Mac-a-mac, *Mudd*!; mts. near Barberton, alt. 1200-1350 met., Febr., *Galpin*, No. 794!

Plate 84. Fig. 1, flower; 2, odd sepal; 3, 4, side sepals; 5, lip; 6, column, with one of the petals, the lip cut off in front; 7, column, one of the glands removed; 8, one of the pollinia,—all variously magnified.

A glabrous erect herb, 1-2 ft. high; stem stout straight leafy; leaves several erect-spreading lanceolate or linear-lanceolate acute nerveless or many-nerved, 2·5-15 cm. long, much longer than the internodes, gradually passing into bracts; raceme ovate or oblong, loosely or densely many-fl., 4-7 cm. in diameter; flowers spreading mostly longer than the veined acuminate

bracts; side sepals oblong obtuse apiculate, somewhat twisted, 1-2 cm. long; odd sepal posticous galeate oblong obtuse, spur from a funnel-shaped base filiform, a little shorter than the limb; petals half exserted beyond the galea erect falcate-oblong obtuse apiculate, 6-10 mill. long; lip spreading linear widened and thickened towards the apex, a little longer than the sepals; rostellum short; ovary slender straight, 1·5-2·8 cm. long.

Described from numerous living and dried specimens; the drawing from a living plant sent by Dr. Schoenland, gathered near Grahamstown early in December, 1889. Colour of the flowers clear rose-pink, with or without darker spots, or lilac with purple spots. This is a very variable species, especially as to the size of the raceme, the size and colour of the flowers, and the texture of the leaves. In some specimens the latter are strongly nerved, but this may be, as is often the case, the result of drying. Of the numerous living specimens I have seen all were nerveless. It is impossible to find any valid distinctions between Sonder's *D. patula* and the present species; and I have satisfied myself, after again finding a similar plant to that on which my *D. stenoglossa* was founded, that it is only a depauperated state of this species, with which I was, at the time I described the former, but little acquainted. *D. nervosa* is most nearly allied to *D. pulchra*, Sonder.



H. Bolus del.

F. Huth, Lith. Edin.

DISA SCHIZODIOIDES, SONDER.

TAB. 85.

Tribe OPHRYDEAE.

Sub-tribe DISEAE.

Genus DISA.

Disa schizodioides, *Sonder, in Linnaea, vol. xix, p. 92 (1847).*—(§ *Orthocarpa*).—Herba glabra erecta spithamaea vel minor; caulis gracilis flexuosus rigidiusculus subaphyllus, vaginis arcte appressis internodiis aequilongis vestitus; folia 8–10, radicalia patentia obovato-oblonga acuta, 2–3 cm. longa, caulina 2–3 linearia multo minora in vaginas abeuntia; racemus subcorymbosus laxe 2–4-fl., bracteis linearibus acuminatis ovario brevioribus; sepala lateralialia patenti-decurva oblongo-obovata acuta, interdum apicem versus inciso-lobulata, 1.5–1.7 cm. longa; sepalum impar cucullatum ovatum acutum, basi productum quasi saccatum, sepalis lateralibus multo minus; petala sub galea inclusa supina linearia obtusa apice ampliata incurva concava obtuse dentata; labellum patens cuneato-obovatum apice obtuse lobulatum (vel, ex *Sonder*, “lanceolatum brevissime puberulum”), sepalis 2–3plo brevius; rostellum obovatum, glandulis subremotis; ovarium clavatum rectum. (*Ex exempl. plur. viv.*)

Hab: South-western Region; CAPE COLONY: on mts. near the farm Puspas Vallei, distr. Swellendam, fl. Oct., *Ecklon & Zeyher*; in rocky clefts on the Langebergen, near Zuurbraak, distr. Swellendam, alt. 1000 met., fl. Jan., *Schlechter*, No. 2045!.

Plate 85. Fig. 1, 2, flowers, natural size; 3, one of the side sepals; 4, ditto, from another flower; 5, odd sepal; 6, one of the petals; 7, lip; 8, a flower with the sepals removed; 9, column,—all the latter variously magnified.

A glabrous erect herb, a span high or less; stem slender flexuous rather rigid almost leafless, clothed with closely appressed sheaths as long as the internodes; radical leaves 8–10, spreading obovate-oblong acute, 2–3 cm. long, cauline 2–3 linear, much smaller; raceme subcorymbose, loosely 2–4-fl., bracts linear acuminate little shorter than the ovary; side sepals spreading decurved oblong-obovate acute, sometimes inciso-lobulate near the apex, 1.5–1.7 cm. long; odd sepal cucullate ovate acute, produced as if saccate at the base, much smaller

than the side sepals ; petals included under the galea supine linear obtuse, widened incurved concave and obtusely toothed towards the apex ; lip spreading cuneate-obovate with an obtuse tooth-like lobe at the apex (or, according to Sonder, "lanceolate, very shortly puberulous") half to one-third the length of the side sepals ; rostellum obovate, glands rather remote ; ovary clavate straight.

Described and drawn from living plants sent in Jan., 1893, by Mr. Schlechter, from Zuurbraak. Colour of the flowers white, with dark purple tips to the petals and lip. A very distinct species which must be somewhat rare, since it had only been found once before Mr. Schlechter's recent discovery, and I am therefore greatly indebted to him for enabling me to figure it in this work.



DISA PURPURASCENS, Bolus.

TAB. 86.

Tribe OPHRYDEAE.

Sub-tribe DISEAE.

Genus DISA.

Disa purpurascens, Bolus, in Journ. Linn. Soc. (Bot.), vol. xx, p. 482 (1884).—(§ *Herschelia*).—Herba glabra erecta, 1-1½-pedalis; caulis strictus vel subflexuosus rigidus aphyllus, vaginis membranaceis adpressis internodiis brevioribus vestitus; folia radicalia 6-8, erecto-patentia linearia graminoides acuta rigida, per anthesin marcescentia, caule multo breviora; racemus laxus 2-3 fl., bracteis ovatis acutis membranaceis, ovario subaequilongis; sepala lateraliter patentia-deflexa oblonga acuta, 1.8 cm. longa; sepalum impar cucullatum, ore suborbiculare, 1.4-1.6 cm. diametro, subacutum, calcare adscendente obtuso, circa 4 mill. longo; petala subgalea inclusa supina subdolabriliformia apice rotundata denticulata, basi ampliata columnae adnata; labellum patens ovatum cuspidatum plus minus crenulatum, margine inflexo; anthera resupinata, glandula pollinium unica transverse oblonga; rostellum 3-lobum; ovarium gracile decurvum. (*Ex exempl. plur. viv.*)

Hab: South-western Region; CAPE COLONY: by streams on the Muizenberg, Cape Peninsula, alt. 330 meters, fl. Nov., Bolus, No. 4893; from there along the hills southward nearly to Cape Point, various collectors.

Plate 86. Fig. 1, one of the side sepals; 2, odd sepal,—natural size; 3, lip, spread out by hand, magnified 2 diameters; 4, 5, column with petals and part of the ovary; 6, one of the petals; 7, pollinarium, viewed from behind; 8, part of leaf, upper surface; 9, ditto, under surface; 10, section of leaf; 11, rostellum after removal of the pollinarium, the stigma cut through in front,—figs. 4-11 variously magnified.

A glabrous erect herb, 1-1½ ft. high; stem straight or subflexuous rigid leafless, clothed with membranous appressed sheaths shorter than the internodes; leaves radical 6-8, erect-spreading linear grass-like acute rigid, withered during flowering, much shorter than the stem; raceme laxly 2-3-fl., bracts ovate acute membranous, about as long as the ovary; side sepals spreading-deflexed oblong acute, 1.8 cm long; odd sepal hooded,

the mouth suborbicular, 1·4–1·6 cm. in diameter, subacute, spur ascending obtuse about 4 mill. long; petals included within the galea, supine, somewhat hatchet-shaped, rounded and toothed at the apex, widened and adnate to the column at base; lip spreading ovate cuspidate more or less crenulate, margins inflexed; anther resupinate, the single gland of the pollinia transversely oblong; rostellum 3-lobed; ovary slender decurved.

Described and drawn from a living plant from the station first above-named. Colour of the sepals blue, the lip and parts of the petals violet, upper limb of the petals and spur yellowish green, anther cells pink. Variable in the tothing of the lip, which is sometimes nearly entire. Closely allied to *D. graminifolia*, Ker (see Plate 37 in the first part of this work); but, besides the considerable difference in the lip, the flowering season is widely different, and I have no doubt as to its specific distinction. The species seems to be confined to the southern part of the Cape Peninsula; south of Simon's Town it may often be found in quantity.



H. Bolus del.

F. Huth, Lith. Edin.

DISA FORFICARIA, Bolus.

TAB. 87.

Tribe OPHRYDEAE.

Sub-tribe DISEAE.

Genus DISA.

Disa Forficaria, Bolus.—(§ Orthocarpa.)—Herba erecta, $1\frac{1}{2}$ -pedalis; caulis aphyllus subflexuosus rigidus, vaginis remotis membranaceis multinervis inferioribus brevibus subobtusis sensim longioribus acuminatis vestitus; folia radicalia, circa 6, erecto-patentia linearia graminioidea acuta rigidula striata, caule multo breviora; spica sublaxa 12–18-fl., bracteis acuminatis floribus brevioribus; sepala lateralialia incurvo-erecta ovata acuminata concava, 8 mill. longa; sepalum impar anticum horizontali-porrectum subcochleariforme, margine erosulo, basi unguiculatum, lateralibus aequilongum; petala supra sepalum impar reclinata approximata lanceolata ultra medium recurva ciliataque apice bidentata intus carinata; labellum posticum erecto-recurvum subreniforme, apice obscure trilobulatum ciliatum, 4–5 mill. longum; anthera suberecta; rostellum breve in alas ciliatas utroque latere columnae adnatas productum; glandulae majusculae, caudiculis abbreviatis; stigma planum; ovarium rectum clavatum. (*Ex exempll.* 2 viv.)—*Forficaria graminifolia*, Lindley, *Gen. & Sp. Orch.*, p. 362 (1838).

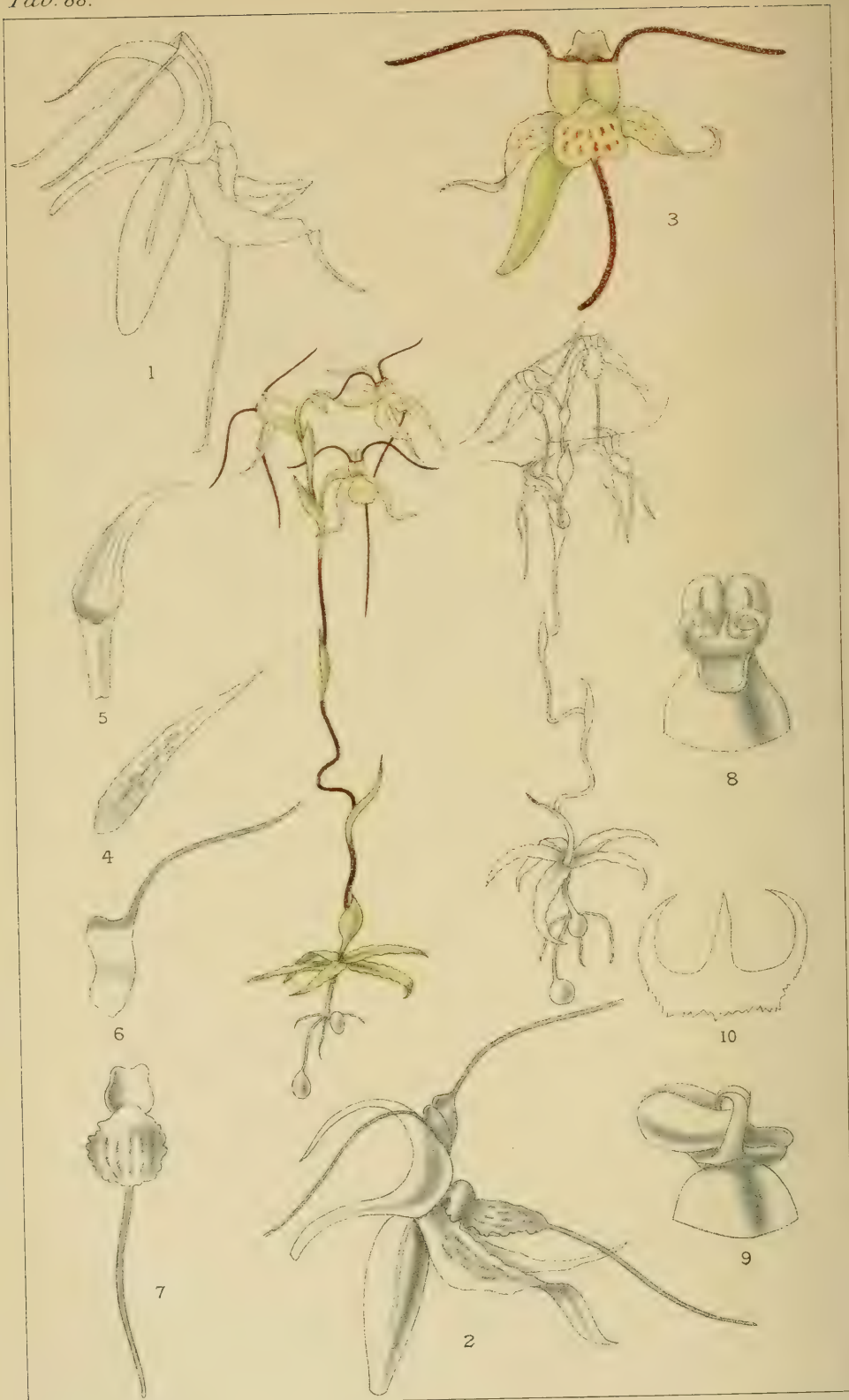
Hab: South-western Region; CAPE COLONY: Du Toit's Kloof, alt. 900–1200 met., Oct.–Jan., *Drège*; Hottentot's-holland Mts., *Ecklon & Zeyher* (*vide* Sonder in *Linnaea*, xix, p. 105); stony hillsides, Forest Hall, near Plettenberg Bay, alt. about 200 met., fl. March–April, *Miss C. B. Newdigate* (in my herb.).

Plate 87.—Fig. 1, flower, front view; 2, ditto, side view; 3, odd sepal; 4, one of the side sepals; 5, petals; 6, lip; 7, column of a somewhat mature flower; 8, ditto, of a very young flower, back view; 9, ditto, side view; 10, rostellum, detached and laid open, showing the ciliate wings; 11, one of the pollinia,—all variously magnified.

An erect herb, $1\frac{1}{2}$ ft. high; stem leafless subflexuous rigid, clothed with distant many-nerved sheaths, the lower short and somewhat obtuse, the upper gradually longer and acuminate; leaves radical, about 6, erect-spreading linear grasslike acute rather rigid, striate, much shorter than the stem; spike some-

what laxly 12-18-fl., bracts acuminate shorter than the flowers; side sepals erect-incurved ovate acuminate concave, 8 mill. long; odd sepal anticus horizontally projecting, somewhat spoon-shaped, margin toothed, clawed at base, as long as the side sepals; petals lying upon the odd sepal, approximate lanceolate recurved or hooked and ciliate beyond the middle, emarginate and keeled within; lip posticus erect-recurved, somewhat kidney-shaped, obscurely trilobulate and ciliate at the apex, 4-5 mill. long; anther suberect; rostellum short, produced on either side the column into adnate ciliate wings; glands rather large, with short caudicles; stigma flat; ovary straight clavate.

Described and drawn from a specimen received April, 1895, from Miss C. B. Newdigate, gathered near Plettenberg Bay. Colour of the sepals greenish yellow with bands of a steely blue purple; lip petals and anther crimson. I am greatly indebted to my kind correspondent above named for the opportunity of figuring this rare plant. Examination of fresh specimens shows that there is nothing whatever to separate it from *Disa*; in floral structure it agrees well with the other members of the group *Orthocarpa*, differing only in habit and leaves. It does not, however, seem to me to be advisable to place it in a distinct section on that account only. I may add that a careful examination of fresh buds did not confirm Lindley's description of the aestivation. He says, "[sepalo] intermedio mutico majore antico lateralia aestivatione imbricante." I found the lateral sepals exterior, and to a considerable extent, though not entirely, covering the odd sepal.



H. Bolus del.

F. Huth, Lith. Edin.

SCHIZODIUM ANTENNIFERUM, SCHLECHTER.

TAB. 88.

Tribe OPHRYDEAE.

Sub-tribe DISEAE.

Genus SCHIZODIUM.

Schizodium antenniferum, *Schlechter*, in *Engler's Botanische Jahrbücher*, *ined.*—Herba glabra erecta pusilla, 8–11 cm. alta; caulis aphyllus filiformis rigidiusculus flexuosus saepissime bis terve abrupte flexus, levis, bracteis 3 minimis rigidulis cucullatis ovato-lanceolatis acuminatis remote vestitus; folia 4–6, radicalia, rosulata humistrata lanceolata acuta crispulata, 1–1.5 cm. longa; racemus laxe 2–4-fl., floribus patentibus, bracteis lanceolatis pedicellis gracilimis subaequilongis; sepala lateralia patentia lanceolata acuminata, saepius medio torta, circa 1–3 cm. longa; sepalum impar conforme erecto-recurvum, calcare arcuato obtuso limbo brevior donatum; petala erecta oblonga truncata, angulo exteriori superiore processu filiformi patente 1.1–1.5 cm. longo ornata; labellum hypochilio concavo, mesochilio suborbiculari convexo, epichilio filiformi pendulo 1.2–1.5 cm. longo; rostellum inter Schizodia insigne, majusculum erectum trilobum, lobis subulato-linearibus acutis, lateralibus incurvis, intermedio erecto. (*Ex exempll. plur. viv.*)

Hab: South-western Region; CAPE COLONY: summit of the Piquetberg Mt., near the town, alt. 490 met., fl. Sept., *Schlechter*, No. 5248!.

Plate 88. Figs. 1, 2, 3, flowers; 4, one of the side sepals; 5, odd sepal; 6, one of the petals; 7, lip; 8, column, front view; 9, ditto, side view; 10, rostellum, detached and laid open,—all variously magnified.

A small glabrous erect herb, 8–11 cm. high; stem leafless wiry rigid smooth and polished, flexuous and generally twice or thrice abruptly bent, bracts 3 very small rigid hooded ovate-lanceolate acuminate distant; leaves 4–6, radical rosulate lying flat on the ground lanceolate acuminate crispulate, 1–1.5 cm. long; raceme laxly 2–4-fl., flowers spreading, bracts lanceolate about as long as the slender pedicels; side sepals spreading lanceolate-acuminate, usually twisted in the middle, about 1.3 cm. long; odd sepal of similar shape but shorter, erect-recurved,

spur arched obtuse shorter than the limb; petals erect oblong somewhat truncate, the outer and upper angle produced into a filiform spreading process 1·1–1·5 cm. long; hypochil of the lip concave, mesochil roundish convex; epichil filiform pendulous 1·2–1·5 cm. long; rostellum remarkable in the genus, rather large erect 3-lobed, lobes linear-subulate acute, the side ones incurved, the intermediate erect.

Described and drawn from several living specimens kindly sent to me from Piquetberg by Mr. Schlechter, the discoverer, and hitherto the only collector of the species. Colour of the flowers greenish yellow, with purple spots on the lip and on the tips of the petals, the long filiform processes of the lip and petals dark purple. A very distinct and curious species, as remarkable for its much developed rostellum as for its peculiar petals and lip.—Since the first part of this work was published I have judged it better to maintain the genus *Schizodium* as distinct from *Disa* on account of its peculiar habit and lip. Plates 33 and 34, therefore, representing *Schizodiums* under the names of *Disa torta*, Swartz, and *Disa clavigera*, Bolus, must be taken as figures of *Schizodium arcuatum*, Lindley, and *S. bifidum*, Reichenbach fil., respectively.



H. Bolus del.

F. Huith. Lith. Edin.

DISPERIS CAPENSIS, SWARTZ.

TAB. 89.

Tribe OPHRYDEAE.
Sub-tribe CORYCIEAE.
Genus DISPERIS.

Disperis, Swartz, in *Kongl. Vetensk. Acad. Nya Handl.*, vol. xxi, p. 218 (1800), char. emend.—Sepalum posticum concavum cucullatum vel galeatum cum petalis in galeam antice apertam vel fere clausam connivens vel saepius agglutinatum, lateralia libera patentia dorso plus minus saccata vel calcarata, saccis in aestivatione pro recipiendis brachiorum rostellis. Labellum polymorphum, basi saepissime angustum raro ampliatus columnae adnatum sub galea retractum, sursum saepissime appendice majuscula multiforini bipartita vel bilabiata auctum, rarissime simplex. Columna brevis; anthera resupinata horizontalis vel adscendens, loculis parallelis adnatis, pollinia in loculis solitaria granulosa, granulis saepissime distichis, glandulis cum caudiculis discretis saepius cartilagineis. Rostellum inter Orchideas indole et magnitudine insigne, valde dilatatum triangulare vel ovatum margine deflexo, supra antheram incumbens eamque saepius superans, basin versus in brachia glandulifera cartilaginea torta vel rarius recta, porrecta vel divaricata, productum. Stigma bilobum vel bipartitum subantecum, lobis utroque latere unguis labelli positus. Capsula erostris clavata vel cylindrica.—Herbae terrestres saepius tenerae. Folia pauca radicalia vel caulina saepissime dissita, angusta vel ampliata. Inflorescentia spicata vel racemosa, multiflora, pauciflora vel uniflora. Bracteae herbaceae lanceolatae ovatae vel suborbiculares, saepius flores subaequantes.—Species 35–40, praecipue Africae Australis incolae, in Afr. tropica, insulis africanis, et India late dispersae.

Disperis capensis, Swartz, in *Kongl. Vetensk. Acad. Nya Handl.*, vol. xxi, p. 220, t. iii, fig. F. (1800); Ker, in *Journ. Sci. R. Inst. Lond.*, vol. v, t. 1, f. 2 (1818); Lindley, *Gen. & Sp. Orch.*, p. 370 (1839).—Herba erecta, spithamea ad pedalem vel ultra; caulis bifolius strictus vel subflexuosus basi pilosus sursum glaber; folia remota erecto-patentia lanceolata vel lineari-lanceolata acuminata basi laxè vaginantia, 4–6 cm. longa; flos solitarius vel rarissime 2 racemosi, bracteis foliaceis ovario subaequilongis; sepala lateralia patentia lanceolata setaceo-acuminatissima, circa 2 cm. longa, medio obtuse saccata; sepalum impar cucullatum apice dorso saccatum antice in appendicem erectam filiformem tubulosam productum; petala subrhomboidea concava incurva, angulis rotundatis; labellum basi lineare sursum ampliatus lanceolatum apice decurvo-uncinatum muticum vel pone apicem appendice lanceolata lacerata vel integra auctum; rostellum cordatum subobtusum, brachiis tortis erecto-incurvis; pollinibus demptis cito involutis. (*Ex exempl. plur. viv.*)—*Arethusa capensis*, Linnaeus *fil. Suppl.*, p. 405 (1781); *Dipera capensis*, Sprengel, *Syst. Veg.*, iii, p. 696 (1826); *D. tenera*, Sprengel, *loc. cit.*

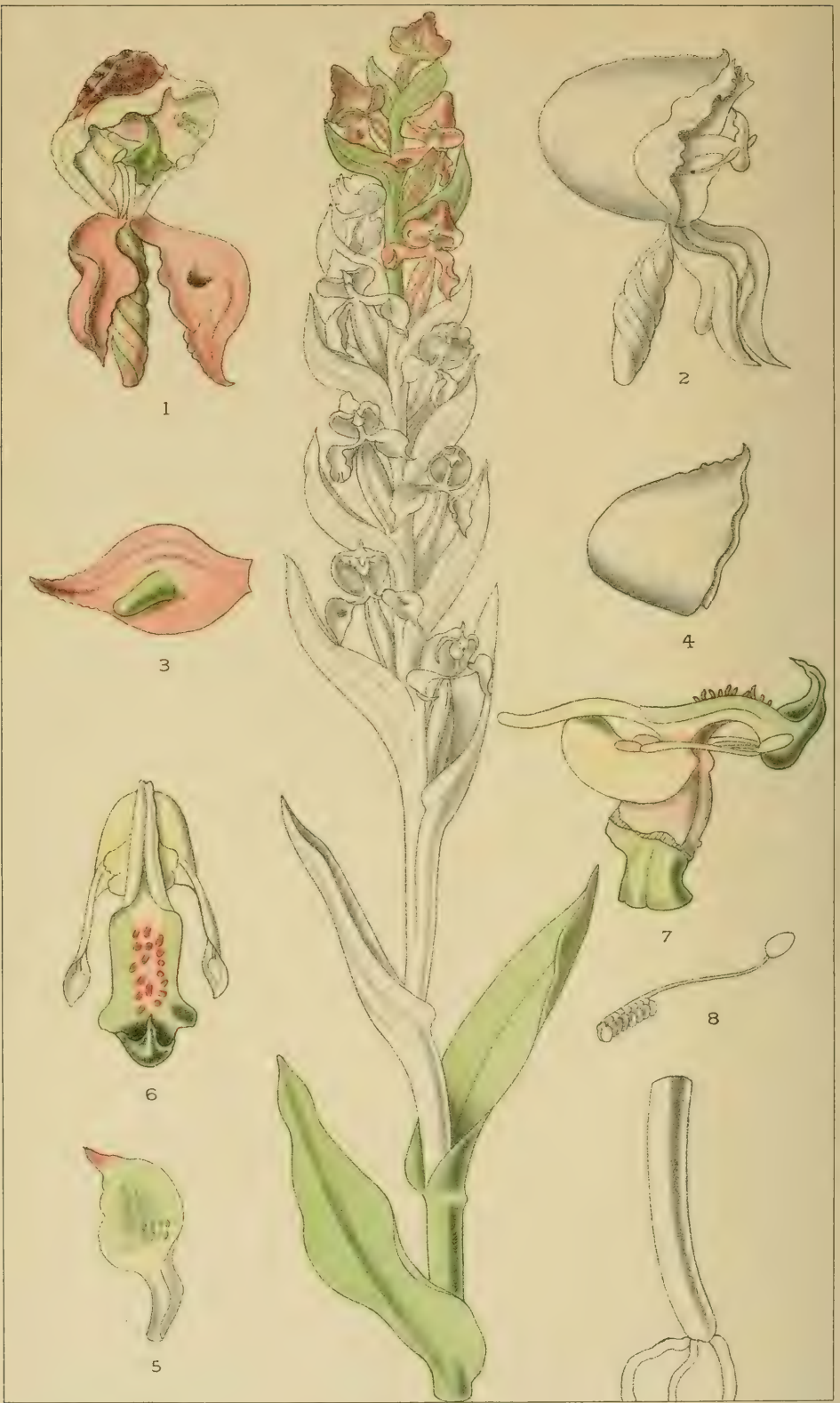
Hab: South-western and South-eastern Regions; CAPE COLONY: plains and mountains from Cape Town to near Grahamstown; on the Cape Peninsula from the foot to near the summit of Table Mt. (1075 meters). fl. July–Aug., frequent, sometimes abundant, many collectors,

Plate 89. The figure of the whole plant to the left shows the average-sized one-flowered form; that in the centre the rare and more luxuriantly grown two-flowered form. Fig. 1, flower from a yellow variety; 2, vertical section through the middle of a flower, the apex of the side sepal cut off; the colour boundary shows the line of junction of the red petal with the green odd sepal; 3, column with lip, viewed obliquely from front and side; 4, column only, front view; 5, the rostellum cut off at its junction with the ovary and reversed, showing the pollinia *in situ* attached by their glands to the rostellary arms; 6, the anther with top of the ovary as it appears after removal of the covering rostellum, the pollinia having been lifted out with the latter, viewed from above; 7, cross section through the middle of the lip and clinandrium, showing part of the lip above, below that the rostellum, next the pollinia *in situ*, and lastly the anther cells and connective; 8, one of the pollinia; 9, ditto, as revolute in less than a second after withdrawal; 10, lip, from a form without dorsal appendage,—all variously magnified and from several different flowers.

An erect herb, from a span to a foot or more high; stem 2-leaved, straight or subflexuous, pilose towards the base, glabrous above; leaves remote erect-spreading lanceolate or linear-lanceolate acuminate, loosely sheathing at base, 4–6 cm. long; flower solitary, or very rarely 2 racemose, bracts leaflike about as long as the ovary; side sepals spreading lanceolate setaceo-acuminate, about 2 cm. long, obtusely saccate in the middle; odd sepal hooded, with a blunt sac at the apex behind, produced at front into an erect filiform tubular acute appendage; petals subrhomboidal concave incurved, the angles rounded; lip linear at base, widened and lanceolate above, decurved or hooked at the apex, muticous or furnished behind with a lanceolate or toothed appendage; rostellum heart-shaped subobtusate, with erect-spreading twisted arms at the base; pollinia quickly revolute after withdrawal.

Described and drawn from living plants gathered near Cape Town. Colour of the flowers variable: from a rosy purple which is darker on the edges, to lilac; there is also a form with yellow or greenish flowers. In the latter the lip is usually narrower above and often destitute of the dorsal appendage, or sometimes present only in a reduced form. The species is very distinct by the long claw-like points to the sepals, and the form of its lip.

In *Disperis* the viscid surface of the glands of the pollinia appears to be always directed towards the back of the flower. Fertilisation is therefore probably effected by a retractive movement of the visiting insect. The pollinia in this species, and I believe in most, become spirally revolute in less than a second after withdrawal. The granules of the pollinia then lie either nearly in a plane, or sometimes, as in *D. purpurata* (see plate 91), they project in every direction. In either case they are more or less well fitted for striking the stigma from any direction. Yet I found in 1884, that of 100 plants of this abundant species only 13 had been visited by insects, and only 7 had the stigma pollinated (*Orch. of Cape Penins.* p. 86). It should be added, however, that there appeared to be some deficiency in the viscosity of the pollinary glands, and that therefore insects may in some cases have visited the flowers without leaving any trace.



H. Bolus del.

F. Huth, Lith. Edin.

DISPERIS STENOPECTRON, REICHENBACH FIL.?

TAB. 90.

Tribe OPHRYDEAE.

Sub-tribe CORYCIEAE.

Genus DISPERIS.

Disperis stenoplectron, *Reichenbach fil., Otia Bot. Hamb. p. 102* (1881)?.—Herba glabra erecta, spithamæa vel ultra; caulis strictus laxè foliosus; folia 3-4, sparsa erecto-patentia internodiis æquilonga vel longiora, oblonga vel lanceolata acuta, 2-6 cm. longa, racemus laxè 3-12-fl., bracteis lanceolatis flores sæpius superantibus; sepala lateraliter deflexa lanceolata acuminata basi angustata, 9 mill. longa, calcarè obtuso 2 mill. longa; sepalum impar æquilongum cucullatum acuminatum, fundo obtusissimo; petala e basi lineari ovato-lanceolata oblique torta 1-nerva; labellum ungue lineari adnato, deinde bipartitum subpanduræforme, parte anteriori majore explanata marginibus reflexis vel patentibus, medio constricto, subtus per sacculum conicum geniculato-inflexa, secus longitudinem seriebus pluribus papillarum suberectarum cristata, parte posteriori lineari marginibus involutis, totum circa 1 cm. longum; rostellum brachia horizontalia porrecta linearia stricta divaricato-patentia, apice cochleariformia; anthera brevissimæ. (*Ex exempl. unico vivo plur. exsiccatisque.*)

Hab: South-eastern Region; CAPE COLONY: south side of Mt. Currie, Griqualand East, alt. 1700 met., fl. Febr., *W. Tyson*, No. 2525!; grassy ridges, Dohne Mt., March, *T. R. Sim*, No. 25!, *Flanagan*, No. 2309!.

Plate 90. Fig. 1, flower, front view; 2, ditto, side view; 3, one of the side sepals; 4, odd sepal; 5, one of the petals; 6, column with lip, viewed from above; 7, ditto, side view; 8, one of the pollinia,—all variously magnified.

A glabrous erect herb, a span or more high; stem straight loosely leafy; leaves 3-4, scattered, erect-spreading, as long as or longer than the internodes, oblong or lanceolate acute, 2-6 cm. long; raceme laxly 3-12-fl., bracts lanceolate usually longer than the flowers; side sepals deflexed lanceolate acuminate narrowed at base, 9 mill. long, spur obtuse 2 mill. long; odd sepal of equal length hooded acuminate, with a very obtuse base; petals from a linear base ovate-lanceolate, obliquely twisted, 1-nerved; lip with a short linear claw adnate at base, thence

spreading at a right angle into two parts, the whole being somewhat fiddle-shaped, the front part wider oblong, covered in the middle with several rows of purple papillae, the apex hooked or upturned in a sharp knee-bent angle and very acute, the posterior part (answering to the handle of the fiddle) linear with involute margins, the whole appendage about 1 cm. long; arms of the rostellum horizontal projecting linear straight divaricate-spreading, spoon-shaped at the apex; anther and rostellum very short.

Described and drawn from a living plant sent by Mr. Sim from the Dohne Mt., March 16, 1893, and from several dried specimens. Colour of the sepals purple, spurs of the side sepals green; petals greenish-yellow with dark green veins and spots; lip green, with purple centre and crest of darker purple papillae. It is impossible to know certainly whether this is Reichenbach's plant. The description of a species of so complicated a structure by the use of few words is difficult, if not impossible; and that by the author of this plant is far too brief. In such a case the student ordinarily refers to the type specimen; but this is effectually precluded by the terms of Reichenbach's will, by which his whole collection remains sealed at Vienna for twenty-five years from the date of his death. It is a question whether the botanical world generally would not have promoted the true interests of the science and discouraged similar unworthy vagaries for the future, by agreeing at the recent Genoa Congress that the usual rule of priority of nomenclature should not hold good in any case where the only type specimen existed in Reichenbach's herbarium, and where no other specimen named by him was available for reference elsewhere. At present it can only be said that this is probably Reichenbach's plant. The species has a near ally in *D. Cooperi*, Harvey (*Thes. Cap. t. 172*). The general type of the lip is the same, the shape of the front part, however, being rather oblong than heart-shaped; but the greatest difference is in the arms of the rostellum, which are here straight, but in that species are sharply knee-bent, a difference which I believe to be of great specific value. I may also mention here that I have dissected a flower of Cooper's No. 1100, the type of *D. Cooperi*, Harvey, that I found Harvey's figure above quoted substantially correct, as far as it goes, and quite undeserving of the sneer with which it was treated by Reichenbach in *Otia Bot. Hamb.*, p. 103.



H. Bolus del.

F. Huth, Lith. Edin?

DISPERIS PURPURATA, REICHENBACH FIL.

TAB. 91.

Tribe OPHRYDEAE.
Sub-tribe CORYCIEAE.
Genus DISPERIS.

Disperis purpurata, *Reichenbach fil.*, in *Linnaea*, vol. xli, p. 55 (1877).—Herba humilis erecta, 3-7-uncialis; caulis bifolius saepius scabro-puberulus; folia remota, inferius cordato-orbiculare acutum, 1.5-2.2 cm. longum, superius minus angustius; flos solitarius, bractea anguste lanceolata, 1-1.3 cm. longa, ovario brevior; sepala lateralia patentia elliptica, obtuse alteque saccata: sepalum impar conico-saccatum, ostio lanceo acuto, lateralibus aequilongum; petala obovata acuta, margine antico lobato; labellum basi ligulatum, supra medium in processum instar spathae poculiformis expansum. dentibus duobus ex utroque margine quasi ansulis auctum, 8 mill. longum; rostellum ovatum, brachiis latis brevibus tortis; granulae pollinium subaciculares. (*Ex exempl. plur. viv.*) *D. namaquensis*, *Bolus*, in *Journ. Linn. Soc. (Bot.)*, vol. xx, p. 486 (1884).

Hab: South-western Region; CAPE COLONY: Hantam Mts., near Calvinia, *Dr. Meyer*; near Ookiep, Nama'land, fl. Oct., *Rev. W. Morris!*; in stony places, near Kasteel Poort, same district, alt. about 950 met.. fl. Sept., *Bolus*, No. 5820.

Plate 91. Fig. 1, one of the side sepals; 2, odd sepal; 3, petals; 4, column, with lip, side view, *g*, the gland of the pollinia; 5, ditto, viewed from above and somewhat in front; 6, pollinia incurved after withdrawal,—all variously magnified.

A small erect herb, 3-7 inches high; stem 2-leaved usually roughly puberulous; leaves distant, the lower cordate-orbicular acute, 1.5-2.2 cm. long, the upper smaller and narrower; flower solitary narrow-lanceolate, 1-1.3 cm. long, shorter than the ovary; side sepals spreading elliptical, deeply and obtusely saccate, 1 cm. long; odd sepal as long, conical-saccate, the mouth lanceolate acute; petals obovate acute, front margin lobed; lip ligulate at base, dilated above into a spathe-like or goblet-shaped piece, with a projecting acute tooth on the margin in front and behind resembling handles, 8 mill. long; rostellum

ovate, the arms short wide twisted ; granules of the pollen somewhat needle-shaped.

Described and drawn from living specimens of my No. 5820, gathered as above in Sept., 1883. Colour of the flowers dull rosy red with several green spots on the petals. The flowers are variable in size. Reichenbach describes them as larger than those of *D. capensis*, Swartz ; the specimens I have figured are smaller, but I subsequently saw some larger.



TAB. 92.

Tribe OPHRYDEAE.

Sub-tribe CORYCIEAE.

Genus DISPERIS.

Disperis Woodii, *Bolus, in Journ. Linn. Soc. (Bot.), vol. xxii, p. 78 (1885)*.—Herba glabra pusilla, 5–7·5 cm. alta; folia 2, radicalia cordato-ovata acuta undulata reticulate venosa, 1–5 cm. longa; scapus gracilis uniflorus, bractea ovata subobtusa ovario brevior; sepala lateralibus deflexa lanceolata acuminata, 6 mill. longa, medio sacco brevi obtuso aucta; sepalum impar altigaleatum vel in calcar extensoriiforme adscendentem productum, antice porrectum acutum, 1–1·5 cm. longum; petala subrhomboidea acuta; labellum in fundum galeae extensum, 8–9 mill. longum, basi ligulatum, medio lacinula antica retrorsa decurva cordata acuta ornatum, postice caruncula perulaeformi praeditum, deinde sursum filiforme apice nunc bifidum lobis approximatis obtusis, nunc integrum abrupte deflexum acuminatum. (*Ex exempl. 4 exsiccatis iconique ad vivam delineata.*)

Hab: South-eastern Region; NATAL: on a grassy hill, Inanda, alt. about 600 met., fl. April, *J. M. Wood*!; Noodsberg, fl. May, *ib.*, No. 127!; station not given, *J. Sanderson*, No. 1010!; also *Schlechter*, the number unknown to me.

Plate 92. Fig. 1, odd sepal; 2, one of the side sepals; 3, one of the petals; 4, lip; 5, ditto, side view; 6, column with lip, front view; 7, column, side view; 8, 9, lip, side and front view, from other plants (drawn by R. Schlechter),—all variously magnified.—Note: the analytical figures are drawn from dried specimens.

A small erect glabrous herb, 5–7·5 cm. high; leaves 2, radical cordate ovate acute waved netted-veined, 1·5 cm. long; scape slender 1-fl., bract ovate subobtuse shorter than the ovary; side sepals deflexed lanceolate-acuminate, 6 mill. long, a short obtuse sac in the middle; odd sepal galeate, from an inflated base produced into an ascending extinguisher-shaped spur, apex of the galea bent downward acute, the whole 1–1·5 cm. long; petals subrhomboidal acute, the outer margins irregularly sinuate; lip extending to the bottom of the galea, 8–9 mill. long, ligulate at base, thence widened into a cordate acute leaflike appendage

pendulous in front, thickened behind and hollowed into a pouch-like receptacle, becoming filiform above, either bifid at the apex with approximate obtuse lobes, or entire acuminate and abruptly bent downward.

Described and the analytical figures drawn from several dried specimens; the figures of the entire plant drawn by Miss A. Clarke in Natal from living specimens. Sepals rose-pink, with carmine markings; petals paler, with light green dots in front; scape red; leaves dark green, with pale veins. The species is variable in the length of the galea and in the apex of the lip; it is somewhat rare, and one of the prettiest of this interesting genus.



H. Bolus del.

F. Huth, Lith. Edin.

DISPERIS BOLUSIANA, SCHLECHTER.

TAB. 93.

Tribe OPHRYDEAE.
Sub-tribe CORYCIEAE.
Genus DISPERIS.

Disperis Bolusiana, Schlechter, in Engler's *Botanische Jahrbücher*, *incl.*—Herba gracilis, 7–21 cm. alta; caulis erectus, bifolius villosus 1-florus; folia 2 patentia ovata obtusa vel acuta, 1–2 cm. longa, internodio pollicari breviora: sepala lateralibus patentibus lanceolata acuminata, 7 mill. longa, sacco conico amplo 5 mill. longo praedita; sepalum impar altigaleatum, dorso obtuse conicum, apice apiculatum; petala oblique ovata acuta margine anteriori patente subundulata; labellum unguiculatum supra medium in processum spathae instar expansum, lobo postico lineari apice piloso, lobo antico multo breviori acuto glabro; rostellum ovatum, brachiis tortis apice semiannularibus. (*Ex exempl. plur. viv.*)—*D. purpurata*, Reichenbach fil., var. *parvifolia*, Bolus, in *Journ. Linn. Soc. (Bot.)*, vol. xxii, p. 79 (1885).

Hab: South-western Region; CAPE COLONY: near Stellenbosch, John Sanderson, No. 937!, in herb. Kew; in sandy places near Groene Kloof, alt. 90 met., fl. Oct., Bolus, No. 4337; near Hopefield, 60 met., Sept., Schlechter, No. 5321!.

Plate 93. Fig. 1, 2, different flowers; 3, odd sepal; 4, petals; 5, lip; 6, column with lip, side view; 7, ditto, front view; 8, one of the pollinia,—all variously magnified.

A slender herb, a span or less in height; stem erect 2-leaved villous 1-fl.; leaves spreading ovate obtuse or acute, 1–2 cm. long, shorter than the inch long internode; side sepals spreading lanceolate acuminate, 7 mill. long, with a conical wide sac, 5 mill. long; odd sepal galeate, elevated and obtusely conical, apiculate in front; petals obliquely ovate acute, front margin spreading subundulate; lip clawed, expanded above the middle into a spathe-like piece, the hinder lobe linear pilose at the apex, the front lobe much shorter acute glabrous; rostellum ovate, the arms twisted semiannular at the apex.

Described and drawn from living plants brought to me by Mr. Schlechter from the Malmesbury district, and from several

dried specimens quoted above. Colour of the flowers dull yellow, with green spots on the petals. The species is closely allied to *D. purpurata*, *Reichenbach fil.* (see Plate 91, above), but the differences will be readily seen on comparison. I formerly regarded it as a small-flowered variety of that species, knowing it only from dried specimens; but an examination of Mr. Schlechter's fresh specimens induces me to concur in his view that it is distinct.



TAB. 94.

Tribe OPHRYDEAE.

Sub-tribe CORYCIEAE.

Genus DISPERIS.

Disperis cucullata, Swartz, in *Kongl. Vetensk. Acad. Nya Handl.*, vol. xxi, p. 220 (1800); Ker, in *Journ. Sci. R. Inst. Lond.*, vol. vi, t. 1, f. 4 (1819).—Herba erecta, 7–20 cm. alta; caulis subvalidus bifolius breviter pubescens; folium inferius ovatum acutum 3-nervum ciliatum, superne glabrum, inferne secus nervos pubescens, folium superius subconforme angustius, 1.5–2.5 cm. longa; flos solitarius, rarissime 2, bractea ovata foliacea, saepius flore breviori; sepala lateraliter patentia lanceolata acuminata, circa 1.4 cm. longa, medio calcare conico 4 mill. longo donata; sepalum impar galeatum conicum acutum, apicem versus lateraliter compressum, lateralibus subaequilongum; petala anguste falcata acuminata; labellum basi lineare, medio cruciforme, sursum in processum cyathiforme dilatatum, postice in appendicem linearem longam rectam apice pubescentem productum; rostellum brachia remota patenti-deflexa. (*Ex exempl. plur. viv.*)

Hab: South-western Region; CAPE COLONY: on the slopes of the mountains of the Cape Peninsula, alt. 60 to 250 meters, fl. Sept., Bolus, No. 4887; Stellenbosch, *Herb. Norm. Austr.-Afr.*, No. 338; Paarl, Zeyher, No. 3938, as to part; French Hoek, 340 met., Sept., Bolus, No. 8408.

Plate 94. Fig. 1, flower, front view; 2, odd sepal, side view; 3, one of the petals; 4, column with lip, side view; 5, one of the pollinia as revolute immediately after withdrawal,—all variously magnified.

An erect herb, mostly less than a span high; stem stoutish, shortly pubescent, two-leaved; lower leaf ovate acute 3-nerved ciliate, glabrous above, pubescent on the nerves below, the upper leaf similar but narrower, length from 1.5–2.5 cm.; flower solitary, very rarely 2, bract ovate leaflike, generally shorter than the flower; side sepals spreading lanceolate acuminate, about 1.4 cm. long, furnished in the middle with a conical spur about 4 mill. long; odd sepal galeate conical acute, the high ascending

sac or summit rounded and laterally compressed, about as long as the side sepals; petals narrow-falcate acuminate; lip linear at base, cruciform in the middle with two short arms, thence dilated into a goblet-shaped process, the rim higher and acute in front, reflexed on the sides, and produced behind into a long linear straight piece, pubescent at the apex; arms of the rostellum distant spreading deflexed.

Described and drawn from living specimens from the Cape Peninsula. Flowers green. The shape of the lip is very peculiar, and I do not know any other species with which it can be compared. It seems to be rather scarce on the Peninsula, but I found it in some numbers in French Hoek, near the farm Keerwieder.



H. Bolus del.

F. Huth, Lithr. Edinb.

DISPERIS CARDIOPHORA, HARVEY.

TAB. 95.

Tribe OPHRYDEAE.

Sub-tribe CORYCIEAE.

Genus DISPERIS.

Disperis cardiophora, *Harvey, Thes. Cap., vol. ii, p. 4, t. 106* (1863).—Herba erecta glaberrima, spithamæa ad pedalem; caulis substrictus monophyllus; folium radicale late cordato-ovatum (vel cordato-reniforme ex Harvey) acutum erecto-patens, 1·5–2·5 cm. longum; spica multiflora bifaria, bracteis patenti-recurvis foliaceis reniformibus complicatis floribus brevioribus; sepala lateralia patentia lanceolata acuta, medio sacco obtuso aucta, circa 7 mill. longa; impar galeatum dorso rotundatum convexum valde incurvum; petala obovata concava incurva; labellum adscendens unguiculatum basin versus lacerato-fimbriatum, sursum ampliatus appendice brevi lanceolata horizontaliter porrecta; columna ovoidea brevis; rostellum brachia subhorizontaliter patentia apice ampliata cochleariformia. (*Ex exempl. unico vivo pluribusque exsiccatis.*)

Hab: South-eastern Region; CAPE COLONY: mts. near Stockenstrom, fl. Jan., *Scully*, No. 191!; Dohne Mt. near Fort Cunynghame, Dec., *T. R. Sim.*—NATAL: Field's Hill near Richmond, Nov., *J. Sanderson*, No. 488!; grassy hills, Inanda, alt. 550 met., Oct., *J. M. Wood*, No. 1066!

Plate 95. Fig. 1, flower, front view; 2, odd sepal; 3, one of the petals; 4, column with lip, front view; 5, ditto, side view; 6, ditto, viewed from above and behind; 7, one of the pollinia; 8, ditto, revolute after withdrawal; 9, a bract spread out,—all variously magnified.

An erect glabrous herb, from a span to a foot high; stem rather straight 1-leaved; leaf radical widely cordate-ovate, or, according to Harvey, cordate-reniform acute erect-spreading, 1·5–2·5 cm. long; spike many-flowered, flowers two-ranked, bracts spreading-recurved leaflike reniform complicate shorter than the flowers; side sepals spreading lanceolate acute, with an obtuse sac in the middle, about 7 mill. long; odd sepal galeate dorsally rounded convex much incurved; petals obovate concave incurved; lip ascending clawed, with a lacerate fringe

on either side near the base, dilated and lanceolate upwards, with a short lanceolate retrorse appendage in front; column ovoid short; arms of the rostellum subhorizontally spreading, widened and spoon-shaped at the apex.

Described and drawn from a living specimen sent by Mr. Sim from the Dohne, and from several dried specimens. Colour of the side sepals greenish with bright red near the sacs, galea grey or dull lilac, petals pale purple darker at the apex, lip greenish with a purple appendage. A species at once recognizable by its single leaf and bifarious spike.



TAB. 96.

Tribe OPHRYDEAE.

Sub-tribe CORYCIEAE.

Genus DISPERIS.

Disperis Bodkini, *n. sp.*.—Herba tenera pusilla erecta spithamaea vel minor; caulis gracillimus bifolius pubescens; folium inferius 2-4 cm. supra basin, cordatum acutum amplexicaule, 1.6-1.9 cm. longum, alterum conforme minus internodio parum brevius; flores 1-2, bractea foliacea foliis conformi, ovario cum pedicello breviori; sepala lateraliter deflexo-patentia lanceolata acuminata saccata, 4 mill. longa; sepalum impar adscendens galeatum acutum, fundo obtuso latere compressiusculo, circa 6 mill. longum; petala rhomboidea concava incurva, margine anteriori irregulariter sinuato; labellum basi semi-annulare columnae basin arete cingens, deinde lineare adscendens, apice bifido, medio appendice retrorsa porrecta lineari apice concava uncinata ornatum; rostellum brachia linearia incurva, apicibus glanduliferis oblique adscendentibus parum dilatatis. (*Ex exempl. plur. viv.*)

Hab: South-western Region; CAPE COLONY: on the Claremont flats near Cape Town, in shady places under shrubs, alt. about 25 met., fl. Aug., *A. Bodkin*, No. 7970 in my herb., herb. Kew, &c.

Plate 96. Fig. 1, flower, front view; 2, ditto, side view,—magnified about 4 diams.; 3, one of the side sepals; 4, 5, petals; 6, lip, side view; 7, column with lip, front view; 8, ditto, side view,—all the latter variously magnified.

A small delicate herb, a span or less in height; stem erect very slender 2-leaved pubescent; lower leaf rising from 2-4 cm. above the base of the stem, cordate acute amplexicaul, the upper similar but smaller, scarcely shorter than the internode; flowers solitary, or 2, bracts leaflike in shape and texture, shorter than the ovary and pedicel; side sepals spreading-deflexed lanceolate acuminate, shortly saccate in the middle, 4 mill. long; odd sepal ascending galeate acute, obtuse at the bottom of the galea and somewhat compressed at the sides, about 6 mill. long; petals rhomboidal concave incurved, the front margin irregularly sinuate; lip semi-annular at base, closely embracing the base of the column, then ascending and linear, bifid at the apex, with a

retrorse projecting linear appendage in the middle which is somewhat concave and hooked at the apex; arms of the rostellum linear incurved, the gland-bearing points obliquely ascending and very little dilated.

Described and drawn from several living plants found as above. Colour of the galea green, the rest of the flower creamy white, spurs of the side sepals and spots on the petals green, stem and under sides of the leaves purple. A delicate little species approaching my *D. MacOwani* in habit and the general type of its lip, but otherwise differing very considerably. For its discovery we are indebted to Mr. Bodkin, who found it 7th Aug., 1895, in an unfrequented spot sheltered by trees from the westward, and concealed from observation by a rather deep undergrowth, which well accounted for its not having been previously detected.



H. Bolus del.

F. Huth, Lith. Edin.

PTERYGODIUM INVERSUM, SWARTZ.

TAB. 97.

Tribe OPHRYDEAE.

Sub-tribe CORYCIEAE.

Genus PTERYGODIUM.

Pterygodium inversum, Swartz, in *Kongl. Vetensk. Acad. Nya Handl.*, vol. xxi, p. 217 (1800); *Ker, Journ. Sci. R. Inst.*, vol. ix, t. 4 (1820); *Thunberg, Flor. Cap.*, ed. 1823, p. 23.—Herba glabra erecta robusta, 1-2-pedalis; caulis strictus foliatus; folia 4-6, subdisticha lanceolato-ensiformia, 6-10 cm. longa, in bracteas subsimiles abeuntia; spica cylindrica dense multiflora, 3-4 cm. diametro, bracteae ovaria parum superantes, flores subnutantes; sepala lateralialia supera postica approximata reflexa lanceolata concava, basi quasi inflata, cum sepalo impari petalisque circa 8 mill. longa; sepalum impar inferum anticum lanceolatum fornicatum; petala inversa oblonga concava; labelli limbus superus posticus adscendenti-incurvus transverse oblongus concavus crenulatus unguiculatus, circa 3 mill. longus, appendice antica deflexa linguaeformi biloba carnosa, 5-6 mill. longo; antherae loculi remoti, in extremitatibus brachiorum rostellii; ovarium cylindricum, sursum tortum. (*Ex exempll. plur. viv.*)—*Ophrys inversa*, Thunberg, *Prodr. Plant. Cap.*, p. 2 (1794).

Hab: South-western Region; CAPE COLONY: near Riebeeck's Kasteel, and about Piquetberg, Sept.-Oct., Thunberg; near Breede River, Gill; between Groene Kloof and Saldanha Bay, also between Pedros Kloof and Lilliefontein, near the Khamiesbergen, alt. 900-1200 met., Nov., Drège; Groene Kloof, 90 met., Oct., Bolus, 4335; Piquetberg, in open ground near the village, 200 met., frequent in Oct., *ib.*; Hex R. Valley, near the H. R. East Railway Station, 520 met., Oct., *ib.*

Plate 97. Fig. 1, 2, a flower, front and back view; 3, 4, lip, with column and part of ovary, front and back view; 5, odd sepal; 6, one of the side sepals; 7, a petal; 7a, a petal from another flower, more enlarged; 8, the lip detached, side view; 9, one of the pollinia,—all variously magnified.

A stout erect glabrous herb, 1-2 feet high; stem straight leafy; leaves 4-6, subdistichous lanceolate-sword-shaped lax, 6-10 cm. long, passing gradually into similar bracts; spike cylindrical densely many-fl., 3-4 cm. in diameter, bracts a little

exceeding the ovaries, flowers somewhat nodding; side sepals superior posticous approximate reflexed lanceolate concave, inflated at base, together with the odd sepal and petals about 8 mill. long; odd sepal and petals reversed and hanging down in front of the flower, the sepal lanceolate vaulted, the petals oblong concave much larger than the sepals; limb of the lip superior ascending, transversely oblong, concave, crenulate clawed, about 3 mill. long; the appendix larger deflexed tongue-shaped bilobed fleshy, about 5-6 mill. long; cells of the anther remote, situate at the ends of the arms of the rostellum; ovary cylindrical, twisted above.

Described from several living specimens from Piquetberg, and one from Hex R. Valley. Colour of the flowers greenish yellow, with brown-purple stripes on the lip, and sometimes also on the petals; sepals and bracts green, or sometimes brown on the upper portion. A very distinct species readily known from any other except *Pt. Flanaganii, mihi*, by the reversed position of its flowers, which is effected (as in *Disa elegans*, see Plate 35) by an entire instead of a half twist in its ovary. It was first discovered by Thunberg in 1774 near Piquetberg, where I also found it tolerably abundant during a very pleasant botanical excursion, with my friends Professors Guthrie and Bodkin, exactly 118 years later. Thunberg, like Drège at a later date, travelled slowly northward by that route, and both gathered at the same spot several very local plants which it was a great satisfaction to us to obtain again in the same neighbourhood. Botanists will always find the village of Piquetberg an excellent centre for excursions.



H. Bolus del.

F. Huth, Lithr. Edinb.

PTERYGODIUM FLANAGANI, Bolus.

TAB. 98.

Tribe OPHRYDEAE.
Sub-tribe CORYCIEAE.
Genus PTERYGODIUM.

Pterygodium Flanaganii, *n. sp.*.—Herba glabra erecta subrobusta, $\frac{3}{4}$ –1-pedalis; caulis strictus dense foliosus; folia dense imbricata erecto-patentia vel apice saepe recurva ovata vel ovato-lanceolata acuminata multinerva, basi caulem laxè vaginantia, 3–8 cm. longa; spica oblonga dense multiflora, bracteis ovato-lanceolatis submembranaceis, apicibus saepius reflexis; flores in genere inversi, circa 1·2 cm. longi, 1·5 cm. expansi; sepala lateralia patentia ovato-lanceolata subobtusata multinerva, basi connata; sepalum impar inferum anticum deflexum, lateralibus subconforme, petalis primum adhaerens demum saepe solutum; petala deflexa lanceolata subacuta concava incurva; labellum superum erecto recurvum linguaeforme, sepalis fere aequilongum, infra medium basin versus callis parvis numerosis instructum, appendice e basi limbi orta oblonga subcarnosa nervo elevato percursa, labello duplo brevior. (*Ex exempl. plur. exsiccatis.*)

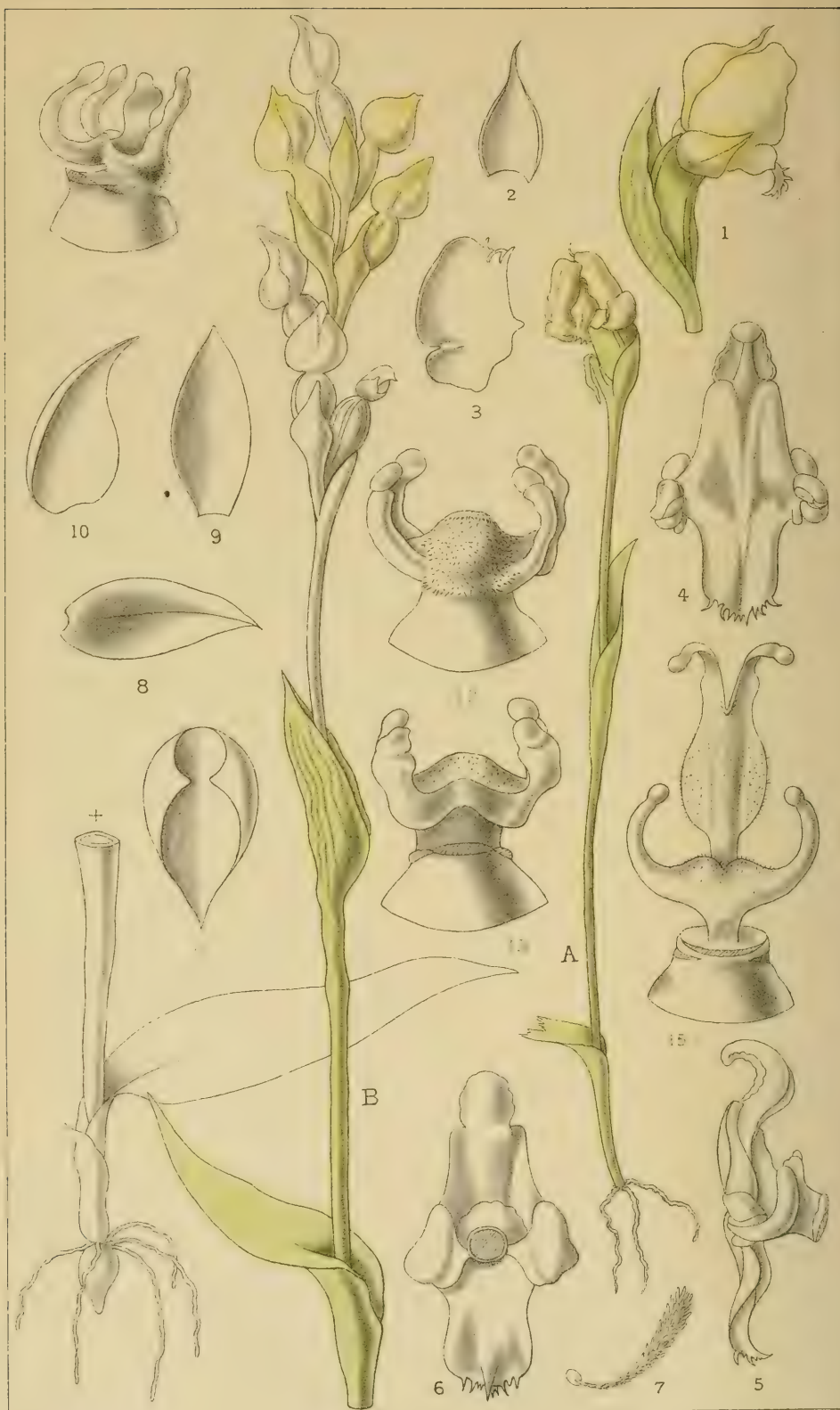
Hab: South-eastern Region; CAPE COLONY: Broughton, near Molteno, alt. 1940 met., fl. Dec. (1892), *H. G. Flanagan*, No. 1639, in my herb., herb. Kew, &c.

Plate 98. Fig. 1, flower, front view; 2, the connate side sepals; 3, odd sepal; 4, petals; 5, lip, with appendage, front view; 6, ditto, back view; 7, ovary; 8, a bract,—all variously magnified, and all from dried specimens.

A glabrous erect somewhat robust herb, $\frac{3}{4}$ –1 foot high; stem straight densely leafy; leaves thickly imbricate erect-spreading or often recurved at the apex, ovate or ovate-lanceolate acuminate many-nerved, loosely sheathing the stem at base, 3–8 cm. long; spike oblong densely many-flowered, bracts ovate lanceolate submembranous, usually reflexed at the apex; flowers inverted, about 1·2 cm. long, 1·5 cm. wide; side sepals spreading ovate-lanceolate subobtusate many-nerved, connate at base; odd sepal inferior deflexed, ovate-lanceolate, at first adherent to the petals often becoming free; petals deflexed lanceolate subacute concave

incurved; lip superior erect-recurved tongue-shaped, almost as long as the sepals, furnished below the middle and near the base with numerous small fleshy calli or warts, appendage rising from the base of the limb oblong subfleshy, traversed by an elevated nerve, half as long as the lip.

Described and drawn from dried specimens collected by Mr. Flanagan as above. Colour of the flowers according to the collector brown or smoky-grey, the bracts and foliage of a similar tint, darker at the tips, the lip dark maroon. This is the second species of this genus which has inverted flowers (as compared with the remaining species of the genus), in which respect and some others it is closely allied to *Pt. inversum*, figured on the preceding plate. In habit and general appearance it much resembles *Corycium microglossum*, Lindley (see Plate 46), which has similarly dry and withered leaves and bracts. This is one of Mr. Flanagan's many interesting discoveries, and I have much pleasure in associating his name with it.



H. Bolus del.

F. Kuhn, Lithr. Edinb.

PTERYGODIUM NEWDIGATAE, Bolus.

TAB. 99.

Tribe OPHRYDEAE.

Sub-tribe CORYCIEAE.

Genus PTERYGODIUM.

Pterygodium Newdigatae, *n. sp.*—Herba glabra erecta spithamea; caulis gracilis substrictus paucifolius; folia saepius 2-3, remota, infimum patens lanceolatum acutum vel acuminatum, basi laxè vaginatum, 6-8 cm. longum, superiora minora erectiora cucullata bracteaeformia; spica laxè 1-3-fl., bracteis lanceolatis acutis concavis; sepala ovato-lanceolata acuminata concava, circa 1.2 cm. longa, lateralia patentia, impar erectum; petala subrhomboidea concava apice lacerata, margine anteriori basin versus sinuato-inciso; labellum recurvo-deflexum oblongum acutum apice laceratum, 3-4 mill. longum, appendice erecta oblonga carnosa crassiuscula apice incurva excavata (illis *Pt. catholicum* et *Pt. acutifolium* persimili); stigmata 2; ovarium clavatum. (*Ex exempll. 3 viv.*)

Var. cleistogamum: Spica floribus saepius numerosioribus; perianthium clausum; petala lanceolata acuminata; labellum ovatum acuminatum involutum marginibus basin versus saepe unidentatis, appendice nulla; columna polymorpha, processibus (brachiis rostellii?) nunc 4 aequalibus erectis nunc per paria varie dispositis, apice loculum antherae gerentibus, granulis pollinis saepe paucis vel subnullis, glandula viscida nulla; stigma nunc unicum terminale indivisum pulvinatum hirtulum, nunc duo quorum unum per brachia rostellii posteriora in alas expansum; capsula clavata, seminibus fertilibus. (*Ex exempll. plur viv.*)

Hab: South-western Region; CAPE COLONY: Forest Hall near Plettenberg Bay, *Miss C. B. Newdigate*, No. 164! (in my herb.); near Knysna, the cleistogamous form only, *R. Schlechter*, No. 5908; Coldspring Farm, near Grahamstown, the cleistogamous form, *J. Glass*, No. 479!.

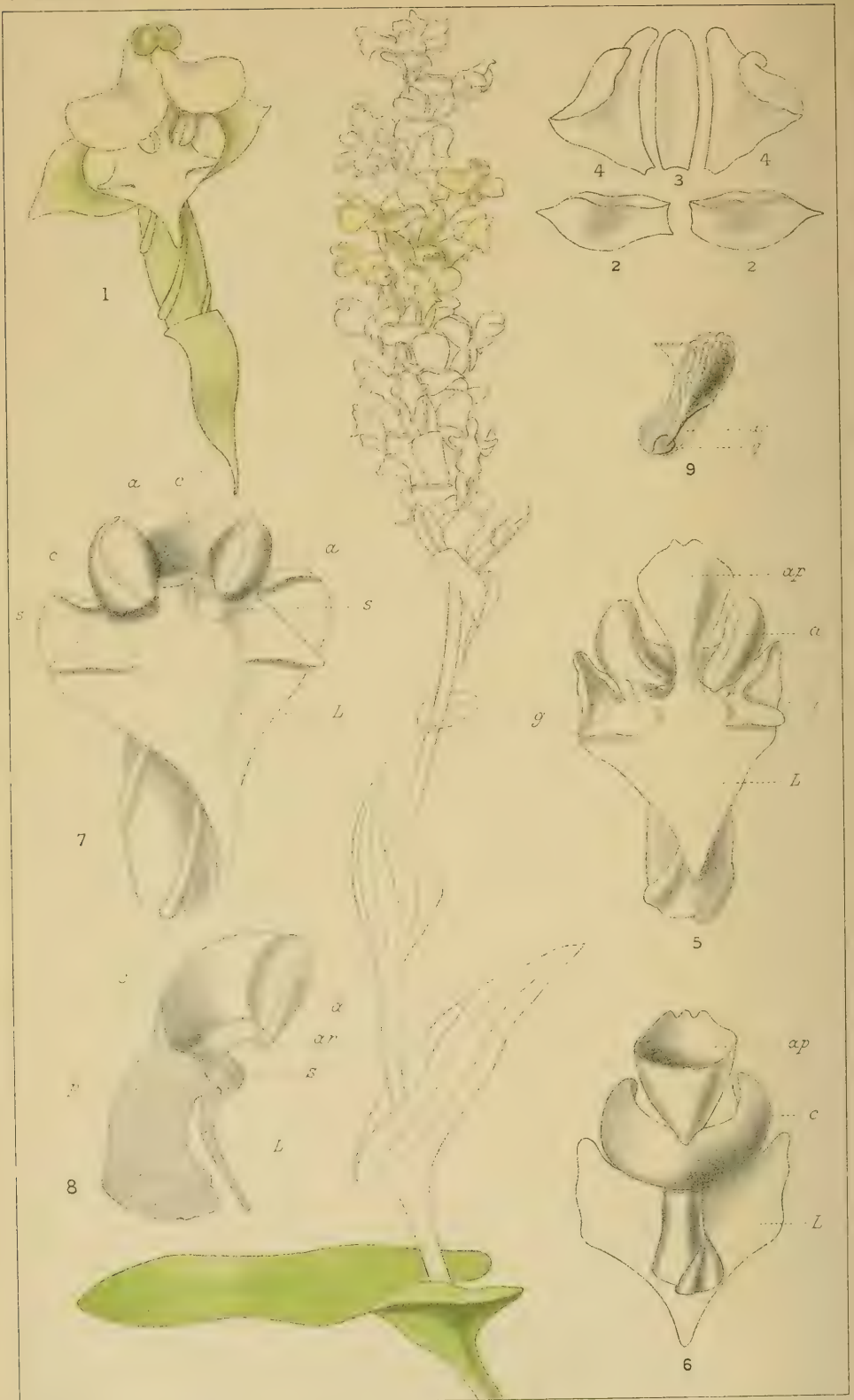
Plate 99. A, a one-flowered plant of the normal form; fig. 1, flower, side view; 2, one of the sepals; 3, one of the petals; 4, lip, with column, front view; 5, ditto, side view; 6, ditto, back view; 7, one of the pollinia. —B, a plant of the cleistogamous form; 8, one of the side sepals; 9, odd sepal; 10, one of the petals; 11, lip; 12, 13, column, front and back view of one form; 14, 15, other forms of the column from different flowers,—all variously magnified.

A glabrous erect herb about a span high; stem slender nearly straight few-leaved; leaves usually 2-3, distant, the lowest spreading lanceolate acute or acuminate, loosely sheathing at base, 6-8 cm. long, the upper smaller more erect, somewhat cucullate, bract-like; spike loosely 1-3-fl., bracts lanceolate acute concave; sepals ovate-lanceolate acuminate concave, about 1.2 cm. long; the side sepals spreading, the odd one erect; petals somewhat rhomboidal concave, slightly lacerate at the top, the front margin sinuate-incised near the base; lip bent downward and backward oblong acute lacerate at the top, 3-4 mill. long, appendage erect thick fleshy oblong narrowed above and hollowed out at the apex (very similar to those of *Pt. catholicum* and *Pt. acutifolium*); stigmas 2; ovarium clavate.

Var. cleistogamum: Spike usually more numerously flowered (2-7-fl.); perianth connivent closed; petals lanceolate acuminate; lip ovate acuminate involute, with a tooth-like lobe on each margin near the base, appendage none; column variously shaped, arms of the rostellum(?) sometimes 4 equal erect, sometimes variously

arranged in pairs each bearing at the apex a small gland-like more or less imperfect anther-cell containing aggregated pollen-grains, sometimes few, sometimes empty (?), without any viscid gland; stigma sometimes terminal undivided cushioned hairy, or stigmas 2, of which one is terminal, the other expanded into wings on either side of the posterior pair of rostellary arms; capsule clavate, seeds with a perfect embryo.

Described and drawn from living plants of both forms sent by Miss C. B. Newdigate as above, and also in part from living plants of the cleistogamous form only, sent by Mr. Glass from near Grahamstown. Colour of the flowers sulphur-yellow; the whole plant dries a pale straw colour. Of the normal form, which seems to be somewhat rare, I received first a one-flowered plant which is figured, and subsequently two taller but withered 3-fl. specimens. The cleistogamous form was found abundantly at all the stations quoted. The species is allied to *Pt. catholicum*, differing by the larger, more oblong, lacerate lip, in the shape of the appendage of the lip, and in the incised petals. Its chief interest lies in its exhibition of a cleistogamic form so different both in its perianth and in its column from those of the normal form that it might, if it stood alone, be taken as the type of a distinct genus. Cleistogamy is not unknown in the order; but it is rare. Mr. Rolfe has been good enough to refer me to the following papers and instances: *Dendrobium crepidatum*, Lindley, noted by him in the Kew Herbarium;—Reichenbach fil., on *Maxillaria rufescens*, Lindley, in *Refugium Botanicum*, vol. ii, sub t. 133 (1882);—H. O. Forbes, On Self-fertilisation in Tropical Orchids, in *Linn. Soc. Journ. (Bot.)*, vol. xxi, p. 547 (1885), where a case of cleistogamy in *Chrysoglossum* sp. is recorded and figured in Plate 17, figs. 6–11;—H. N. Ridley, Notes on Self-fertilisation and Cleistogamy in Orchids, in *Linn. Soc. Journ. (Bot.)* vol. xxiv, p. 390 (1888), recording cases of cleistogamy in *Trichopilia fragrans*, Lindley (Plate 16, figs. 1–9), and in *Dendrobium chrysium*, Rolfe. None of these cases appears to throw any light upon the present one. The erect processes shown in figs. 12 and 13 appear to be homologous with the organs regarded as arms of the rostellum in the normal form (see *Orchids of the Cape Peninsula*, p. 183, and Plate 12, fig. 7); or they may perhaps be a development of the connective of the anther. In this genus and in *Ceratandra* the anther-cells are usually adnate to these arms, and this may also be seen in Plate 48, figs. 6 and 7, of the present work. The anther-cells at the apices of these arms in the cleistogamous form are of variable development. Sometimes they are nearly perfect, the pollinia, however, having no proper caudicle and viscid gland; in some cases the pollen is reduced to a few isolated granules, and even sometimes (though probably not in all of one flower) is wanting altogether. The presence of four anther-cells, equivalent to two anthers, would be very curious, and needs confirmation. No opened or punctured flower has, as yet, been observed; no pollen has in any case been found upon the stigma; yet the ovaries have swollen, producing abundance of seed, and Dr. Schoenland, who examined them, found the seeds to contain a perfect embryo. The question remains, How is the fertilisation effected? This, with some other points in respect of this remarkable species, must await for its elucidation a supply of fresh material, which Dr. Schoenland, who has kindly assisted me in this matter, hopes to obtain during the ensuing season.



H. Bolus del

F. Huth, Lith. Edin.

PTERYGODIUM VOLUCRIS, SWARTZ.

TAB. 100.

Tribe OPHRYDEAE.

Sub-tribe CORYCIEAE.

Genus PTERYGODIUM.

Pterygodium Volucris, Swartz, in *Kongl. Vetensk. Acad. Nya Handl.*, vol. xxi, p. 218 (1800); Ker, in *Journ. Sci. R. Inst. Lond.*, vol. ix, t. 4, f. 1 (1820)—§ *Ommatodium*, Lindley (pro genere).—Herba glabra erecta, $\frac{1}{2}$ –1-pedalis vel ultra; caulis saepius rectus laxefoliatus; folium radicale patens ovatum vel oblongum acutum, 6–10 cm. longum, superiora erectiora minora sensim in vaginas bracteaeformes abeuntia; spica cylindrica multiflora, bracteis lanceolatis deflexis, floribus circa 1·2 cm. longis, 8 mill. latis; sepala lateralia patentia ovata acuta vel subobtusa; sepalum impar oblongum obtusissimum; petala subtriangularia, marginibus superioribus plicato-deflexis; labelli limbus late triangulari-hastatus acutus, plica dentiformi utroque latere patente, appendice erecta subaequilonga cyathiformi, margine obliquo integro vel antice emarginato; antherae connectivum incurvum adscendens subsemiannulare, loculis inversis, glandulis inferis; rostellibrachia connectivo adnata; stigmata 2, antica pulvinata basi labelli appendicis posita. (*Ex exempl. plur. vic.*)—*Ophrys Volucris*, *Linnaeus fil. Suppl.*, p. 403 (1781); *O. triphylla*, *Thunberg, Prodr. Pl. Cap.*, p. 2 (1794); *Ommatodium Volucris*, *Lindley, Gen. & Sp. Orch.*, p. 365 (1838).

Hab: South-western Region; CAPE COLONY: in somewhat dry open places on the flats and at the foot of the mountains on the Cape Peninsula, alt. 20–100 meters, fl. Sept.-Oct., nowhere abundant; near Caledon, alt. 300 met.; Swellendam; Nama'land, mountains near Klipfontein, alt. 950 met.

Plate 100. Fig. 1, flower, front view; 2, side sepals; 3, odd sepal; 4, petals; 5, column, with lip, front view; 6, ditto, posterior view; 7, ditto, the appendage of the lip being removed; 8, ditto, the appendage of the lip and the lower part of the limb of the lip cut off and the column cut vertically through the middle; 9, apex of one of the rostellary arms bearing a pollinium,—all variously magnified: *a*, anther-cell; *c*, connective of the anther; *ar*, one of the arms of the rostellum; *L*, lip; *ap*, appendage of the lip; *s*, one of the stigmas; *g*, gland of the pollinium; *p*, point of attachment of the appendage of the lip which has been removed.

A glabrous erect herb, $\frac{1}{2}$ –1 foot or more in height; stem straight or occasionally flexuous, loosely and distantly leafy; radical leaf spreading ovate or oblong acute, 6–10 cm. long, the upper more erect smaller, passing gradually into bract-like sheaths; spike cylindrical many-fl., bracts lanceolate deflexed, flowers about 1.2 cm. long, 8 mill. wide; side sepals spreading ovate acute or subobtusate; odd sepal oblong very obtuse; petals subtriangular, the upper margins folded over downward; limb of the lip broadly triangular-hastate acute, with a spreading tooth-like fold on either side near the base, appendage about equally long erect cup-shaped, with an oblique margin entire or emarginate or dentate in front; connective of the anther ascending incurved somewhat half-ring-shaped, the cells inverted, glands inferior; arms of the rostellum adnate to the connective of the anther; stigmas 2, placed one on either side of the appendage of the lip, at its base.

Described and drawn from a living plant gathered near Cape Town; and I have seen many others from other stations. Colour of the flowers sulphur yellow, the whole plant drying pale. Lindley separated this plant from *Pterygodium* because, as he said, of "its anther being perfectly erect." Bentham, however, in *Genera Plantarum*, replaced it in *Pterygodium*, calling the anther suberect, and I agree in this view. The position of the anther is not widely different from that of *Pt. carnosum*, Lindley, as shown in my *Orchids of the Cape Peninsula*, t. 12, f. 7. In this species the connective of the anther is differentiated from the rostellum, although they are partially adnate. In other species these bodies seem to coalesce into one.

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APPENDIX.

ADDITIONS TO THE 'ORCHIDS OF THE CAPE PENINSULA.'

IN my work bearing the above title, published by the South-African Philosophical Society in its 'Transactions,' Vol. V, Part I (1888), there are enumerated 102 species of Orchids growing within the limits of the Cape Peninsula. Since then thirteen more species have been discovered, bringing the total up to 115 species. Pending the issue of a list with complete descriptions, I have thought it would be useful to possessors of the above work to have even a mere enumeration of the additional species, with such brief notes as may aid in their identification.

Holothrix exilis, *Lindley*, var. *brachylabris*.—*Bolus*, *Icon. Orch. Austr.-Afr. t. 14.*—Table Mt., *Schlechter*.—Resembles *H. villosa*, *Lindley*, but differs by its undivided lip, which readily distinguishes it.

Satyrium erectum, *Swartz*.—Table Mt., south side, *Schlechter*. Habit of *S. candidum*, *Lindley*, but the perianth segments more spreading, and rose-coloured.

Satyrium retusum, *Lindley*.—Table Mt., *Schlechter*.—Near to *S. Lindleyanum*, *Bolus*, and *S. bicallosum*, *Thunb.*, with longer spurs than the former, and the apex of the lip not deflexed as in the latter. Flowers small, white.

Pachites Bodkini, *Bolus*, *Icones Orch. Austr.-Afr. t. 26.*—Muizenberg, 400 meters, fl. Jan., *Bodkin*.

Disa conferta, *Bolus*, *Icones Orch. Austr.-Afr. t. 28.* § *Monadenia*.—Cape Flats, near Rapenburg, fl. Oct., *F. Guthrie*. Flowers small, the odd sepal destitute of any spur.

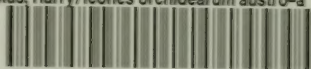
Disa sabulosa, *Bolus*, *Icones Orch. Austr.-Afr. t. 27.* § *Monadenia*.—Cape Flats, Kenilworth Race-course, fl. Oct.-Nov., *A. Bolus*.—Flowers red and pale yellow, rather large.

- Disa auriculata**, *Bolus, Icones Orch. Austr.-Afr. t. 72.* § *Monadenia*.
—Steenberg, 360 meters, fl. Oct., *F. A. Guthrie*.—Allied to
D. multiflora, *Bolus*; flowers usually yellowish green.
- Disa Bolusiana**, *Schlechter, in Engl. Bot. Jahrb. ined.* § *Monadenia*.
—Table Mt., 1000 meters, fl. Jan., *Bolus*, No. 4903.—Allied to
D. rufescens, *Swartz*, but with a deep cleft in the column
between the rostellum and the stigma.
- Disa uncinata**, *Bolus*; see *Icones Orch. Austr.-Afr. t. 82*.—Table Mt.,
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- Disa Draconis**, *Swartz*.—Table Mt., *Schlechter*; also reported from
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named, p. 159.
- Disperis Bodkini**, *Bolus*; see *Icones Orchid. Austr.-Afr. t. 96*.—
Claremont Flats. —Flowers the smallest of the Peninsular species;
helmet green, rest whitish yellow. Fl. Aug.
- Corycium crispum**, *Swartz*; *Bolus, Icones Orch. Austr.-Afr. t. 45*.—
Flats, fl. Sept.—Leaves strongly crisped, flowers golden yellow.
- Corycium microglossum**, *Lindley*; *Bolus, Icones Orch. Austr.-Afr.*
t. 46.—Flats, fl. Nov.—Flowers smoky brown, lip linear acute.

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